Wetland Report for

Buffalo Ridge II Wind Project

Brookings and Deuel Counties,

South Dakota

November 2009

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1.0 EXECUTIVE SUMMARY

Buffalo Ridge Wind II, LLC (Buffalo Ridge II), an unregulated wholly-owned affiliate of Iberdrola Renewables, Inc. (IBR), is proposing to construct a utility-scale wind farm, the Buffalo Ridge II Wind Project (the Project), in Brookings and Deuel counties, South Dakota (Figure 1). The Project would be up to 306 megawatts (MW) in size, consisting of up to 204 wind turbine generators (Figure 2). The turbines, associated access roads, and electrical collection system would be built in four townships. The proposed turbines are typically placed on high ground in order to maximize wind energy production and, as a result, wetlands would not be impacted by wind turbines or their foundations. Proposed access roads and electrical collection systems (both aboveground and underground) would avoid wetland and stream impacts where feasible.

HDR Engineering, Inc. (HDR) conducted a wetland determination for Buffalo Ridge II in the sections containing the proposed wind turbines, access roads, aboveground and underground transmission line and electrical collection system. The wetland determination was conducted using a combination of two methods: "Routine Determination, Onsite Inspection Unnecessary" and "Routine Determination, Onsite Inspection Necessary" as outlined in the *1987 Corps of Engineers Wetlands Delineation Manual* (USACE, 1987). Initially the site was evaluated for wetlands using offsite tools, including aerial photographs, soil survey maps, and U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps. The entire site was field inspected and specific on-site wetland delineations were conducted from May 26 to June 5, 2008 and from July 28 to August 1, 2008. Additional follow up delineations were conducted on the site on September 14 and November 18, 2009.

An onsite wetland inspection was conducted within approximately 300 feet of proposed turbine locations, access roads, aboveground transmission and underground cabling lines. Evaluation of the construction vicinity accommodates possible changes to turbine and access road configurations. Based on the field review of the "Routine Determination, Onsite Inspection Unnecessary" determinations and the field wetland delineations, HDR found that Buffalo Ridge II is avoiding placing turbines in wetlands. The Project area contains crop fields, pasture and prairie swales through gently undulating landscape, which would be crossed by access roads and electrical lines in multiple locations. Generally, the swales do not appear to be jurisdictional wetlands or connected to USACE jurisdictional waters.

Bed and Bank Waterways

Buffalo Ridge II would avoid "defined bed and bank" waterway and wetland impacts to the extent practicable (Table 6 and Figures 6-36). Under the current layout, the proposed aboveground and underground collection systems for the Project would involve bed and bank waterway crossings at

19 locations (including both aboveground and underground electrical). The aboveground electrical system would span the waterways, avoiding permanent impacts. Installation of the underground collection system would likely result in temporary impacts to the waterways by trenching, unless the crossings are directional bored.

Wetlands

The proposed turbines have been sited to avoid impacts to wetland areas. However, proposed access roads, aboveground transmission and underground cabling would involve crossing wetlands and/or waters at 73 locations (19 with defined bed and bank, discussed above; Table 6 and Figures 6-36). Permanent impacts are avoided to the maximum extent practicable by the current layout; however, the current configuration would permanently impact two non-jurisdictional isolated wet basins and one jurisdictional (non-isolated) wet swale as a result of access road construction and placement. None of the permanent impacts are anticipated to result in greater than 0.1 acres of permanent impact to any single wetland and thus would be Nationwide Permit non-reporting level impacts. The remaining wetland crossings would result in temporary impacts and occur within wet basins or wet swales. Aboveground transmission lines would span the wetlands, and temporary disturbance would be minimized during construction as practicable. Underground cabling likely would be trenched across the wetland areas or directionally bored as identified, resulting in temporary or no impacts. See the Routine Determination, Onsite Inspection Necessary Results Section for detailed descriptions of these wetland areas.

USFWS Wetland Easements

There are proposed wind farm facilities on one USFWS wetland easement in the Project boundary, in Section 33, T112N, R48W. The wetland delineations indicate that the current layout avoids all impacts to wetlands within this easement. However, coordination with the USFWS should occur prior to any construction within this easement.

Section 404 Permitting

In South Dakota, jurisdictional wetlands and waters are regulated by the U.S. Army Corps of Engineers (USACE) through Section 404 of the Clean Water Act. Temporary and permanent impacts to waters of the U.S., due to the placement of the electrical system or access roads, are considered separately per the March 2007 re-issuance of the Nationwide Permit (NWP) 12 and NWP 14 definition of a single and complete project. Utility line activities (including access roads) through waters of the U.S. are authorized under NWP 12, and linear access roads are authorized under NWP 14, provided there is no change to pre-construction contours, and the activity does not result in the loss of greater than ½ acre of waters of the U.S. Based on the current layout and the description of crossings received from IBR, the proposed permanent and temporary wetland impacts resulting from construction of the access roads and underground collection system are

expected to meet the general and regional conditions of NWP 12 and NWP 14 and not require pre-construction notification of the USACE. Nineteen of the temporary impacts associated with installation of the aboveground electrical line across jurisdictional wetlands have the potential to be greater than 0.1 acres, which would require pre-construction notice. However, the temporary impact calculations for aboveground electrical installation presented in Table 6 use the "worst-case" assumption that the entire length of the electrical line right of way will be disturbed for a width of 75 feet. HDR recommends that final plan and profile engineering for the aboveground route and construction planning examine these locations to more accurately estimate the amount of temporary impacts necessary. Construction activities in wetlands should be limited as much as possible during construction, and practices such as minimizing construction vehicle traffic through wetlands, assembling the aboveground structures in adjacent uplands, etc., are expected to result in temporary impacts much less than the worst case calculations. If temporary impacts of 0.1 acres or greater to a single non-isolated wetland still cannot be avoided, the USACE district will need to be notified.

Finally, it should be noted that General Condition 17 of the NWP does require that if any species listed under the Endangered Species Act is known to be in the vicinity of the Project and/or may be affected by the proposed construction activity, that the Applicant notify the USACE prior to any work that may affect the listed species. Because the Project is located within watersheds containing documented occurrences of the federally endangered Topeka shiner, coordination with the USFWS and USACE should occur as the layout is being finalized in order to confirm which streams should be considered to provide Topeka shiner habitat, and determine what, if any, avoidance and minimization methods are appropriate.

2.0 INTRODUCTION

Buffalo Ridge Wind II, LLC (Buffalo Ridge II), an unregulated wholly-owned affiliate of Iberdrola Renewables, Inc. (IBR), is proposing to construct a utility-scale wind farm, the Buffalo Ridge II Wind Project (the Project), in Brookings and Deuel Counties, South Dakota (Figure 1). The Project would be up to 306 megawatts (MW) in size, consisting of up to 204 1.5 MW wind turbine generators. It is likely that the Project will be built in two phases: a 210 MW layout in the northern portion of the Project area and a 96 MW layout in the southern portion. This report documents the wetlands delineated for both phases. HDR Engineering, Inc. (HDR) conducted wetland determinations at the proposed site from May 26 to June 5, 2008, from July 28 to August 1, 2008, and on September 14th and November 18th, 2009. The wind project site boundary includes the sections presented in Table 1. The site boundary identifies the area studied for development of the facility. The site layout is a smaller area within the site boundary that has been determined to have the best wind resources and design to balance multiple siting constraints. Within the site boundary the preliminary site layout (Figure 2) identifies construction of the wind facility in seven townships (Table 2). HDR conducted an onsite wetland inspection for Buffalo Ridge II within the sections containing proposed turbines, access roads, and the electrical collection system.

The Project would consist of an array of wind turbines, electrical collection system, and access roads. The turbines would be interconnected by communication and electric power collection cables within the wind farm. In addition, the wind farm facilities would include aboveground 34.5 kV lines and 115 kV transmission lines that would deliver the electricity to the two proposed Project substations (BRII-North and BRII-South), and eventually to Xcel Energy's Brookings County Substation.

Table 1
Sections within the Proposed Buffalo Ridge II Project Site Boundary

County	Township Name	Township	Range	Sections
Brookings	Richland	111N	47W	19, 30
Brookings	Sherman	111N	48W	1-4, 12, 13, 24, 25
Brookings	Lake Hendricks	111N	47W	6, 7, 18
Brookings	Lake Hendricks	112N	47W	30, 31
Brookings	Oak Lake	112N	48W	1-11, 14-23, 25-30, 32-36
Brookings	Argo	112N	49W	1-4, 10-14, 23-26
Deuel	Scandinavia	113N	48W	31-35
Deuel	Blom	113N	49W	33-36

Table 2
Sections with Proposed Turbines, Access Roads, and Electrical Collection System

County	Township Name	Township	Range	Sections
Brookings	Richland	111N	47W	19, 30
Brookings	Lake Hendricks	111N	47W	7, 18
Brookings	Sherman	111N	48W	1-3, 11-13, 25
Brookings	Oak Lake	112N	48W	2-10, 16-22, 26-28, 34-35
Brookings	Argo	112N	49W	1-3, 11-13, 24-25
Deuel	Scandinavia	113N	48W	31-34
Deuel	Blom	113N	49W	34-35

The Buffalo Ridge II Wind Project elements are:

- Turbines – up to 204 1.5 MW turbines. Each turbine would include an approximately 16 foot diameter pedestal and an additional 15 foot radius gravel work area centered on the base of each turbine (for a total diameter of 46 feet). The excavated area for the foundation would be approximately 60 feet in diameter.
- Access roads – 16 feet wide, low-profile, gravel roads connecting turbines to public roads.
- Underground electrical collection system – the power collection lines from the turbines would be plowed or trenched underground to a depth of three to four feet and located adjacent to the access roads, or they would cut across a property to another turbine string. The collector lines would continue underground to the aboveground 34.5 kV line.

- Aboveground 34.5 kV and 115 kV line – the aboveground collection and transmission lines would be built with wood or steel poles, and range in height between 50 and 85 feet. The aboveground lines would connect into the 210 MW Project Substation (BRII-North) and the 96 MW Project Substation (BRII-South). From the Project Substations, the aboveground line would connect into the grid at Xcel Energy's Brookings Substation located in Section 25 of Sherman Township (T111N, R48W) of Brookings County, South Dakota.

- Communications system – each wind turbine is connected to the Supervisory Control and Data Acquisitions (SCADA) system for the purposes of performance monitoring, control, energy reporting, and trouble-shooting. The communication cable is installed with the underground collection system, but is located 6 inches shallower in the trench.

- Two project substations -- 210 MW BRII-North Substation would be located in the northeast quarter of Section 19 of Oak Lake Township (T112N, R48W) and the 96 MW BRII-South Substation would be located in the east half of Section 25 of Sherman Township (T111N, R48W).

- Operations and maintenance facility – this infrastructure would be placed in a tilled agricultural field in the southeast quarter of Section 6 of Oak Lake Township (T112N, R48W).

Temporary disturbances during construction of the Project would include crane pads at each turbine site, temporary gravel roads for the cranes, temporary lay-down areas around each turbine, plowing or trenching in the underground electrical collection system, temporary impacts around the O&M facility and Project substations, construction of the 34.5 kV and 115 kV aboveground lines and storage/stockpile area(s). Construction of each turbine would include temporary impacts of approximately an additional 8 feet of gravel roadway on either side of the permanent roadway (32 foot total width), a 50 foot by 150 foot gravel crane pad extending from the roadway to the turbine foundation which would be graded to a maximum of a one percent slope, and a component laydown area centered around the turbine foundation. The component lay down area would range from approximately 260 ft by 260 ft to 335 ft by 335 ft, depending on the turbine size selected.

3.0 METHODS

The area within the Project boundary is agricultural land that is 60 percent cropped and also includes pasture, haylands, and Conservation Reserve Program (CRP) tracts. The wetland determination was conducted using a combination of two methods: "Routine Determination, Onsite Inspection Unnecessary" and "Routine Determination, Onsite Inspection Necessary," as outlined in the 1987 Corps of Engineers Wetlands Delineation Manual (USACE, 1987).

Potential wetland areas across the entire project area were initially identified within the site using U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps, Farm Service

Agency (FSA) 2006 color aerial photographs, U.S. Geological Survey (USGS) topographic maps, 2008 project-specific aerial photography, and the Brookings and Deuel County Soil Survey Data (available as digital Soil Survey Geographic Database [SSURGO] files). This information was synthesized using Geographic Information System (GIS) mapping for the "Routine Determination, Onsite Inspection Unnecessary" determinations. In addition, the mapped information on NWI wetlands, hydric soils, and USGS topographic streams and water bodies was field-evaluated in the construction vicinity by inspecting the Project site for hydrophytic vegetation and wetland hydrology.

The "Routine Determination, Onsite Inspection Necessary" determinations and delineations focused on areas within the Project site where the proposed facilities will be installed, including turbines, access roads, meteorological towers and electrical collection system are near wetlands or waterways identified using off-site methods, although low-lying and/or wet areas not identified in the off-site data sources were also evaluated. HDR surveyed the areas for the three wetland parameters: (a) hydric soils, (b) surface or subsurface hydrology, and (c) hydrophytic vegetation. If all three indicators are present during the growing season, then the area is considered a wetland. In addition, waterways with or without vegetation that met the hydric soil and hydrology criteria, and were contained within a distinct channel were identified as "defined bed and bank waterways".

The onsite delineations were conducted from May 26 to June 5, 2008, from July 28 to August 1, 2008, and on September 14th and November 18th, 2009, which were all within the growing season, with the exception of the November 18th, 2009 site visit. However, the site was not frozen and there was no snow cover during the November 18th, 2009 site visit. Wetland edges and areas were delineated within the Project site using the "Routine Determination, Onsite Inspection Necessary" procedure. In general, wetlands and waters within 300 feet of proposed turbines, access roads and electrical line crossings were delineated using Global Positioning System (GPS) surveying equipment. Wetlands observed farther than the described survey limits were mapped on field maps, but were not GPS-located. The road and turbine layout evaluated during the delineation covered all construction areas as shown in the October 2008 South Dakota Public Utilities Facility Site Permit Application, and subsequent layout updates through November 18th, 2009.

Because the wetlands in the Project area are very similar to each other, a delineation plot was not taken at every wetland and waterway, but rather at representative locations. At each sample plot a soil pit was dug for observation of soil and hydrologic characteristics. The vegetation was analyzed for plant species dominance in a five-foot radius from the sample pit for the herb and shrub layers and in a 30-foot radius for trees. The wetland indicator status of plants was determined using the *USFWS 1988 National List of Plant Species that Occur in Wetlands (Regions 3 and 4)*, which includes South Dakota. Hydric soil characteristics were identified using methods described in the *1987 Corps of Engineers Wetlands Delineation Manual* (USACE, 1987) and the *Field Indicators of Hydric Soils in the United*

States (USDA, NRCS, 2003). Twenty five wetland determination data sheets were prepared for the Project area.

Data collection points and the wetland and waterway boundaries were mapped using a Trimble ProXH GPS unit. Using GIS, an accurate delineation map was created from the GPS data providing a permanent record of the onsite delineation wetland boundaries in the Project area.

Meteorological conditions in Brookings, SD (approximately 15 miles southwest of the project site) during the month of May 2008 were slightly cooler and wetter than average. Precipitation in May totaled 3.06 inches, 0.11 inches higher than the 30 year average. June and July were drier than average months. Precipitation in June 2008 totaled 3.57 inches which is approximately 0.66 inches less than the average. Similarly, precipitation totals for July 2008 equaled 1.95 inches, approximately 1.16 inches less than the average. May and June were cooler than average months and July was warmer than average by 1.7 degrees. In 2009, the month preceding the September 14, 2009 site visit was drier and cooler than average; the month preceding the November 18, 2009 site visit was wetter and warmer than average. Appendix A contains tabular climatic data which contains temperature and precipitation information from the months preceding field wetland delineations.

4.0 ROUTINE DETERMINATION, ONSITE INSPECTION UNNECESSARY RESULTS

The following resources were synthesized for the "Routine Determination, Onsite Inspection Unnecessary" determinations and delineations: the 2008 project-specific aerial photography, the USGS topographic quadrangle map with USFWS NWI Map (Figure 3), and Brookings and Deuel Counties Soil Survey information (Figure 4).

4.1 NWI Map Review

Wetlands within the Project area were initially identified by reviewing NWI maps. The USFWS developed the NWI maps for the Project area in the 1980s using older aerial photographs. Therefore, the NWI maps only provide guidance in determining areas to be evaluated for wetland characteristics, and should not be used as the sole basis for wetland determinations.

The majority of wetlands in the Project area are small, isolated basins in pastures or agricultural fields, small basins at the top of a wet swale, or swale wetlands associated with a small stream or stream headwaters. Some of the isolated basins and small basins at the top of wet swales have been excavated to create stock ponds. The floodplain wetlands associated with streams or headwaters are typically fenced for pasture use. Some of these wetlands are heavily grazed, while others have not been severely impacted and maintain a relatively diverse range of native wetland plants. There are a total of 717 NWI wetland basins within the Project site boundary, totaling approximately 627 acres. The NWI Wetland types and acreages within the Project site boundary are presented in Table 3.

Table 3
NWI Wetland Types and Acreages within the Project Site Boundary

Wetland Acreages (by type)		
COWARDIN CLASSIFICATION	NUMBER OF BASINS	ACRES[1]
Freshwater Emergent Wetland (PEMA, PEMC, PEMF, PEM/FOA)	509	511
Freshwater Forested/Shrub Wetland (PFOA, PFOC, PSSA, PSSC)	14	12
Freshwater Pond (PABF, PUBF)	192	69
Lacustrine	2	35
TOTAL	**717**	**627**

1. Wetland acreage was calculated using USFWS NWI data in GIS.

4.2 Aerial Photography

The 2006 FSA and 2008 site-specific aerial photographs were evaluated to review current site conditions. HDR used the aerials to aid in mapping wetlands outside of the proposed construction areas based on field observation of vegetation and hydrology. The 2008 project-specific aerials for the proposed construction areas are shown as the background for Figures 6 to 36.

4.3 County Soils

Brookings and Deuel County Soil Survey data is digitally available for the Project site. HDR used the soil data to aid in the evaluation of observed wetland areas for hydric soils. Table 4 presents a summary of hydric soils mapped for the Project site. Figure 4 shows SSURGO mapped hydric soils for the Project area.

Table 4
Hydric Soils within the Project Site

County	Soil Map Unit	Soil Name	Hydric Soil	Drainage Classification
Brookings	Ba	Badger silty clay loam, 0 to 1 percent slopes	Yes	Somewhat poorly drained
Brookings and Deuel	Lk	Lamoure silty clay loam, 0 to 1 percent slopes	Yes	Somewhat poorly drained
Deuel	Lp	Lamoure-La Prairie complex, channeled	Yes	Poorly drained
Brookings and Deuel	Lm	Lamoure-Rauville silty clay loams, channeled	Yes	Poorly drained
Brookings and Deuel	Lo	Lowe loam, 0 to 1 percent slopes	Yes	Poorly drained
Brookings and Deuel	Mr	Marysland loam, 0 to 1 percent slopes	Yes	Poorly drained
Brookings	Mz	Moritz-Lamoure complex, 0 to 2 percent slopes	Yes	Poorly drained
Deuel	Od	Oldham silty clay loam	Yes	Very poorly drained
Brookings and Deuel	Pa	Parnell silty clay loam, 0 to 1 percent slopes	Yes	Very poorly drained
Deuel	Pc	Parnell-Vallers Complex	Yes	Very poorly drained
Brookings and Deuel	Ra	Rauville silty clay loam, 0 to 1 percent slopes	Yes	Very poorly drained
Brookings	Rp	Rauville silty clay loam, ponded	Yes	Very poorly drained
Brookings and Deuel	So	Southam Silty clay loam, 0 to 1 percent slopes	Yes	Very poorly drained
Deuel	Vc	Vallers loam	Yes	Poorly drained

4.4 Field Review

From May 26 to June 5, July 28 to August 1, 2008, and on September 14th and November 18th, 2009, the off-site mapped information was field-evaluated by inspecting the Project site for hydrophytic vegetation, hydric soils, and wetland hydrology. An onsite wetland inspection was conducted in areas where wetlands were identified within the vicinity of proposed project facilities including turbines, access roads and collection system.

5.0 ROUTINE DETERMINATION, ONSITE INSPECTION NECESSARY RESULTS

A summary of the wetland determination data sheets for the Project is presented in Table 5. Copies of the data sheets are attached in Appendix B. Twenty five wetland determination data sheets were prepared for the Project area. Sample plots were evaluated and documented at 15 wetland locations and 10 upland locations within the Project site. Sample plots were collected at representative wetland areas across the site. Common wetland types (e.g. isolated, farmed wetlands dominated by reed canary grass) do not have datasheets for each wetland. For example, sample plots collected at the wet swale sites were all very similar and represent most of the wet swales encountered during the survey.

Table 5
Wetland Determination Data Sheet Summary

Plot Number	Plot Location	Hydrophytic Vegetation	Hydric Soils	Wetland Hydrology	Wetland Determination
2 Upland	SE ¼, S25, T111N, R48W	No	No	No	No
2 Wetland	SE ¼, S25, T111N, R48W	Yes	Yes	Yes	Yes
4 Upland	SE ¼, S24, T111N, R48W	No	No	No	No
4 Wetland	SE ¼, S24, T111N, R48W	Yes	Yes	Yes	Yes
20 Upland	NW ¼, S3, T111N, R48W	No	No	No	No
20 Wetland	NW ¼, S3, T111N, R48W	Yes	Yes	Yes	Yes
27 Upland	NW ¼, S35, T112N, R48W	No	No	No	No
27 Wetland	NW ¼, S35, T112N, R48W	Yes	Yes	Yes	Yes
32 Upland	SW ¼, S36, T112N, R47W	No	No	No	No
32 Wetland	SW ¼, S36, T112N, R47W	Yes	Yes	Yes	Yes
36 Wetland	NW ¼, S28, T112N, R48W	Yes	Yes	Yes	Yes
50 Upland	SW ¼, S20, T112N, R48W	No	No	No	No

Plot Number	Plot Location	Hydrophytic Vegetation	Hydric Soils	Wetland Hydrology	Wetland Determination
50 Wetland	SW ¼, S20, T112N, R48W	Yes	Yes	Yes	Yes
59 Upland	SE ¼, S18, T112N, R48W	No	No	No	No
59 Wetland	SE ¼, S18, T112N, R48W	Yes	Yes	Yes	Yes
66 Upland	SW ¼ S18, T112N, R48W	No	Yes	No	No
66 Wetland	SW ¼ S18, T112N, R48W	Yes	Yes	Yes	Yes
78 Wetland	NW ¼, S19, T112N, R48W	Yes	Yes	Yes	Yes
98 Upland	SW ¼, S3, T112N, R48W	No	No	No	No
98 Wetland	SW ¼, S3, T112N, R48W	Yes	Yes	Yes	Yes
102 Wetland	SW ¼, S33, T112N, R48W	Yes	Yes	Yes	Yes
105 Wetland	SW ¼, S25, T112N, R49W	No	Yes	Yes	Yes
107 Wetland	NW ¼, S24, T112N, R49W	Yes	Yes	Yes	Yes
115 Upland	SW ¼, S10, T112N, R48W	No	No	No	No
115 Wetland	SW ¼, S10, T112N, R48W	Yes	Yes	Yes	Yes

The onsite wetland inspection discussion is presented below. Wetland IDs were numbered consecutively as the data points were collected; wetland IDs were also numbered differently depending on the County. Figure 5 is a key to Figures 6 through 36, showing all sections with Project facilities in the Project area. Data sheets for each plot location are presented in Appendix B. Site photos are presented in Appendix C.

5.1 Wetland Review Site Summary

Section 25, T111N, R48W (Figure 6)

Proposed activities would occur within tilled agricultural field, a grassy swale and filled road edge. While no NWIs are in the vicinity of proposed activities in this section, an isolated basin (Wetland 1) was delineated east of the existing Brookings County Substation. This wetland was constructed to hold stormwater runoff from the substation. It is predominantly unvegetated, with scattered reed canary grass and broad-leaved cattail. Proposed development would avoid Wetland 1.

One USGS-mapped stream is located in the vicinity of proposed Project facilities, parallel to 484th Avenue. Field investigations determined that the area consists of a broad wet swale, with no discernable channel. Wetlands 2 and 3 were delineated within the swale. They demonstrate similar characteristics and are only separated by a filled area which serves as a farm access road running along the half section line. Saturated hydrologic conditions were present throughout both wetlands.

The vegetation is dominated by reed canary grass (*Phalaris arundinacea*), yellow sweetclover (*Melilotus officinalis*), and broad-leaved cattail (*Typha latifolia*).

An access road necessary for construction and maintenance of the proposed BRII-South Substation would result in temporary and permanent impacts to Wetland 3 (Crossing 1). Impacts would be minimized by constructing the proposed road on an existing farm access road as much as possible, and using the steepest sideslopes practicable, resulting in 0.02 acre of permanent impact in Wetland 3 for the permanent 16-foot wide road. During construction, temporary impacts of 0.04 acre would occur within the wetland to accommodate the temporary 32-foot wide construction road. A properly sized culvert will be placed under the proposed access road to allow drainage to continue toward the south.

Proposed underground cabling between 484th Avenue and the BRII-South substation would be installed within the footprint of the proposed access road, thereby avoiding any further temporary impacts to Wetland 3. The proposed aboveground transmission line would avoid impacts by spanning the wetland with the aboveground structures and placing poles in adjacent uplands. Wetland K4-1 was a PEMB wet swale west of the proposed BRII-South Substation. It will not be affected by the proposed facilities.

The upland and wetland sides of the boundary of Wetland 2 are characterized by sample plots 2 Upland and 2 Wetland, respectively. A photo of Wetlands 2 and 3 is included in Appendix C-1.

Section 30, T111N, R47W (Figure 6)

No NWI wetlands or USGS streams are mapped in the vicinity of proposed activities, and no wetlands were identified during field visits to this location.

Section 19, T111N, R47W (Figure 7)

Proposed activities would occur within tilled agricultural fields and pasture. No NWI wetlands or hydric soils are mapped in the vicinity of proposed facilities, but two USGS mapped streams are in the area. Field investigations determined that wetlands are present along both streams. Wetland 4 was delineated in the southwest quarter of the section, in a drainageway upstream from Deer Creek. This drainage appears as an intermittent stream on USGS topographic maps, although no channel was noted during field surveys. Wetland 4 has saturated soils and is dominated by upright sedge (*Carex stricta*) with small patches of reed canary grass. Underground cabling would likely be trenched or plowed through Wetland 4, and temporary impacts could occur during the construction of the 115 kV transmission line (Crossing 2). However, the 115 kV transmission line would span the wetland and pole structures would be placed in adjacent uplands to avoid permanent wetland impacts. The upland and wetland sides of the delineated boundary are characterized by sample plots 4 Upland and 4 Wetland, respectively. Wetland 4 is pictured in Appendix C-1.

Wetland 5 was delineated in the northwest quarter of the section, along a tributary to Deer Creek. Although it appears as an intermittent stream on USGS maps and drains toward the southwest to a larger tributary to Deer Creek, no defined channel is present. The wetland vegetation is dominated by short-awned foxtail (*Alopecurus aequalis*) and soils in the wetland were saturated to the surface. Depending on final configuration, this wetland could be temporarily impacted by underground cabling installation (Crossing 3), or spanned by an aboveground transmission line, although it should be possible to avoid this wetland with minor modifications. Wetland 5 is pictured in Appendix C-2.

Section 24, T111N, R48W (Figure 7)

Under the current Project layout, no development is proposed in this section, and no delineations were conducted in this section.

Section 18, T111N, R47W (Figure 8)

The proposed project activities in this section would occur in tilled agricultural fields, an inactive gravel pit, hay fields, rangeland, pasture and road ROW edge. Wetland 6, located within an area mapped as a USGS stream and NWI wetland, appears to be restricted to the low areas created during gravel extraction in the southwest quarter section. It is dominated by short-awned foxtail vegetative cover and exhibited saturated hydrology. It would be temporarily impacted during the installation of underground cabling (Crossing 4). The aboveground transmission line will span the wetland to avoid permanent impact and pole structures will be placed in adjacent uplands. A photo of Wetland 6 is shown in Appendix C-2.

The NWI indicated several other wetlands near proposed activities in this section. Wetland 7, also located within the abandoned gravel pit, was similar to Wetland 6, and would be avoided by the current layout.

Wetland 8 was delineated in the northwest corner of the section and exhibits seasonally flooded characteristics. This wetland is situated in the low areas of two confluent drainage ravines, although it does not have a defined bed and bank and does not appear as a stream on the USGS topographic map. It extends upstream into the section to the west (T111N, R48W, S13), the section to the north (T111N, R47W, S7), and the section to the northwest (T111N, R48W, S12). The eastern and western extents of Wetland 8 are adjacent to NWI-identified wetlands, which were found to consist of stock ponds during the field survey. Dominant vegetation in this wetland is reed canary grass and broad-leaved cattail. As this wetland extends upstream into two different drainage swales, temporary impacts could occur in two locations for underground cabling trenching (Crossings 5a and 5b). Although temporary impacts are possible during construction of the aboveground transmission line, permanent impacts will be avoided by spanning the wetland and placing pole structures in adjacent uplands. This wetland is pictured in Appendix C-3.

One other wetland (Wetland 104) was delineated in the northeast quarter of this section, in the vicinity of Turbines 140 and 141. It is located in a drainage ravine with no defined channel. The wetland is largely dominated by reed canary grass and prairie cordgrass (*Spartina pectinata*). The adjacent upland slopes exhibited characteristics of a high quality prairie area. Plant species found in the surrounding upland areas include smooth brome, big bluestem (*Andropogon gerardii*), side-oats grama (*Bouteloua curtipendula*), porcupine grass (*Stipa spartea*), pale purple coneflower (*Echinacea pallida*), yellow coneflower (*Ratibida pinnata*), lead-plant (*Amorpha canescens*), hoary verbain (*Verbena stricta*), white prairie clover *(Dalea candida*), purple prairie clover (*Dalea pururea*), wild bergamot (*Monarda fistulosa*), prairie rose (*Rosa arkansana*), silverleaf scurfpea (*Pediomelum argophyllum*) and ox-eye (*Heliopsis helianthoides*). This wetland would not be impacted by proposed development because the collection system layout was revised to avoid these sensitive resources.

Section 13, T111N, R48W (Figure 8)

Under the current layout, no development is proposed in this section. No wetlands were delineated in this section.

Section 7, T111N, R47W (Figure 9)

Project activities would take place in grazed pastureland in this section. No USGS streams or NWI wetlands are mapped in the vicinity of proposed turbines, access road, and cabling in this section, and no wetlands were discovered during field investigations.

Several USGS streams are mapped in the vicinity of aboveground and underground lines planned along this section's western boundary. Wetlands 8, 9, 10, 11, 12, 13 and 14 were delineated in low drainage swales adjacent to or upstream from USGS streams. These wetlands are described in detail below in Section 12, T111N, R48W.

Section 12, T111N, R48W (Figure 9)

The proposed activities would primarily occur in tilled crop fields and pastureland but would also impact some windbreak trees.

Four USGS-mapped streams are located in the vicinity of proposed facilities in this section. Six wetlands were delineated in low drainage swales adjacent (Wetlands 9, 12 and 14) or upstream (Wetlands 10, 11, and 13) from three of these streams. These wetlands are dominated by reed canary grass and upright sedge, and feature saturated hydrologic conditions. No defined channels were observed in these wetlands. Appendices C-3 and C-4 display representative photos of these wetland areas. Permanent impacts would be avoided by spanning the wetland with the aboveground structures.

Depending on final configuration, Wetlands 9 through 12 could be temporarily affected by the proposed aboveground transmission line construction or from trenching in underground cabling

(Crossings 6 through 9). The aboveground 115 kV line could temporarily impact Wetland 13 during construction (Crossing 10); Wetland 14 would be avoided by the current layout. No permanent impacts to these wetlands are anticipated.

Wetland 15 was mapped by the NWI, and was delineated in the southwest quarter of the section. This isolated wetland was dominated by water smartweed (*Polygonum amphibium*). The surrounding cropped area suggests it is likely that this wetland is cropped in drier years. Permanent and temporary impacts would occur in this wetland as a result of access road construction (Crossing 11). Appendix C-5 displays a photo of Wetland 15.

Another NWI-mapped wetland located northeast of Turbine 3 would be crossed by proposed underground cabling. Field investigations determined that the area is non-wetland based on lack of a hydrophytic plant community or evidence of wetland hydrology. It was completely cropped with healthy soybeans at the time of the delineation.

Wetland 118 was delineated in the northwest quarter section, adjacent to a USGS stream flowing south across the section. This wetland is dominated by reed canary grass and exhibits seasonally flooded conditions. This wetland could be temporarily impacted by aboveground transmission line construction but permanent impacts will be avoided by spanning (Crossing 12). Appendix C-5 contains a photo of this wetland area. The NWI indicated two additional wetlands adjacent to the proposed aboveground transmission line along the northern section boundary, but were both were determined to be non-wetland based on lack of hydrophytic plant communities or hydrologic indicators.

Section 1, T111N, R48W (Figure 10)

Proposed activities would occur in tilled crop fields and grazed pasture.

A USGS stream and three NWI-mapped wetlands were indicated in the vicinity of proposed facilities in the northwest and southwest quarters of this section. Field investigations at these locations determined that no wetland characteristics are present, nor is there a defined bank and channel. No wetlands were delineated in this section.

Section 6, T111N, R47W (Figure 10)

Under the current layout, no facilities are proposed in this section. No wetlands were delineated in this section.

Section 2, T111N, R48W (Figure 11)

Proposed activities in this section would occur in tilled crop fields. Field investigations identified three wetlands in the vicinity of project activities. Wetland 16 is located in the southeast quarter of the section, and is associated with a southern flowing USGS stream. Field investigations of this

stream determined that it does not have a defined bed and bank. This wetland is dominated by sandbar willow (*Salix exigua*), broad-leaved cattail, short-awned foxtail, and upright sedge. This wetland will be spanned by the aboveground transmission line pole structures to avoid permanent impacts (Crossing 13).

Wetlands 17 and 18 are similar to Wetland 16, as they are associated with a southern flowing USGS identified stream. Field investigations at these locations determined that wetland conditions are present, although a defined channel is absent. The two wetland basins are separated by a rise in topography that was vegetated with healthy soybeans at the time of the delineation. They are dominated by reed canary grass and upright sedge. Wetland 18 is labeled as Crossing 14 (Figure 11), which would consist of an aboveground transmission line span; no permanent impacts will occur in Wetland 18. Wetland 17 will be avoided by the current layout.

Three NWI-mapped wetlands indicated in the vicinity of Turbine 15 lacked hydrophytic plant communities or hydrologic indicators. Additionally, USGS-mapped streams indicated southwest of Turbine 14 and between Turbines 17 and 18 were found to be completely cropped through with no hydrophytic vegetation or hydrologic indicators, and were therefore determined to be non-wetland.

Section 3, T111N, R48W (Figure 11)

Proposed activities would occur in tilled crop fields. Three wetlands were delineated in the vicinity of proposed Project facilities, although they were not identified by the NWI. Wetlands 68 and 69 were delineated northwest of Turbine 11. These farmed, isolated wetlands consisted of stunted and drowned out corn as the dominant vegetative cover. Wetland 68 would be temporarily impacted by trenching during the installation of underground cabling (Crossing 16). Wetland 69 would be avoided by the current layout.

Wetland 20 is located within a grassy swale, upstream from a USGS identified stream in the northwest quarter section. This swale lacks a defined bed, channel and bank. It exhibits a saturated hydrologic regime and is dominated by reed canary grass. Underground cabling will temporarily impact this wetland as a result of trenching (Crossing 15). The upland and wetland sides of the delineated boundary are characterized by sample plot locations 20 Upland and 20 Wetland, respectively. Appendix C-6 contains a photograph of this wetland.

The NWI indicates a wetland adjacent to the access road to Turbine 13; however, field investigations determined that wetland characteristics were not present at this location. All other NWIs will be avoided by proposed activities in this section.

Section 4, T111N, R48W (Figure 12)

Proposed activities in this section would occur in tilled agricultural fields. Wetland 19, an isolated and farmed wetland mapped by the NWI, consisted of stunted crops and water smartweed.

Wetland 19 will be temporarily impacted by underground cabling installation (Crossing 17). Appendix C-6 shows this wetland.

Section 36, T112N, R48W (Figure 13)

Proposed activities would occur in tilled fields. The wetlands delineated in this section were in the vicinity of Project facilities in a preliminary layout that are no longer proposed under the current layout.

Wetland 32 includes the upper reaches of a USGS stream, an excavated stock pond, and an NWI-mapped wetland. The western extent of this wetland consists of saturated grassy swales that drain eastward down to an impounded stock pond. The wetland plant community is dominated by reed canary grass, giant goldenrod (*Solidago gigantea*), dark-green bulrush (*Scirpus atrovirens*) and stinging nettle (*Urtica dioica*). This wetland will not be impacted as a result of proposed development in this section. The upland and wetland sides of the delineated boundary were characterized by sample plots 32 Upland and 32 Wetland, respectively.

Wetland 30 is located in the northwest quarter of the section, in a deep drainage ravine along a USGS-identified stream. This PEMB wetland is dominated by upright sedge and reed canary grass. Wetland 30 is not mapped by the NWI, and will be avoided by proposed facilities.

Wetland 31 is not mapped on the NWI or the USGS; however, field investigation identified wetland characteristics in the bottom of the swale that is hydrologically connected to a USGS stream. The current layout avoids impacts to this wetland.

Section 31, T112N, R47W (Figure 13)

Under the current layout, no facilities are proposed in this section. No wetlands were delineated in this section.

Section 35, T112N, R48W (Figure 14)

Proposed activities would occur in a tilled crop field. Wetlands 130 and 132 were saturated emergent wetlands indicated as USGS streams along the western section line. Wetland 133 was not a USGS stream but drained under 482nd Avenue into a mapped stream. Wetlands 130, 132, and 133 were all dominated by reed canary grass, and may be temporarily impacted during construction of the aboveground 115 kV transmission line (Crossings 18 through 20). Permanent impacts to these wetlands would be avoided by spanning them. Two wetlands (Wetlands 27 & 28) were located to the north of Turbines 30 and 31. These wetlands are located in separate grassy drainage ravines lacking a defined bank and channel. There are no USGS streams associated with these wetlands, and neither was indicated on the NWI. They are both dominated by reed canary grass and upright sedge, and exhibit saturated conditions. Wetlands 27 and 28 will be avoided by proposed Project

activities. The upland and wetland sides of the delineated boundary of Wetland 27 are characterized by sample plots 27 Upland and 27 Wetland, respectively.

Wetland 29 is located along a grassy drainage ravine in the northeast quarter of the section. It is situated in the same drainage swale as Wetland 30 (Section 26, T112N, R48W), but on the west side of 483rd Avenue and exhibits the same vegetative cover and hydrologic regime. It will be avoided by proposed Project facilities.

Section 34, T112N, R48W (Figure 14)

Proposed activities would mostly occur in tilled crop fields but also in a planted grassland, pasture and in private land adjacent to road ROW. Wetlands 129 and 131, adjacent to USGS-mapped streams, and Wetland 134 were delineated along the eastern section line, and were dominated by reed canary grass. No impacts would occur in these wetlands under the current layout.

Several USGS intermittent streams occur in this section, and converge in the west half of the section. These streams are unnamed tributaries to Sixmile Creek, and are consist of gently sloping grassy drainage swales and feature defined bed and banks. Four delineated wetland areas identified as Wetlands 25 and 26 are associated with the riparian areas of this tributary system. Dominant vegetation in both Wetlands 25 and 26 is upright sedge, reed canary grass, broad-leafed cattail, and sandbar willow. Temporary impacts would occur to Wetland 25 where the underground cabling is routed between Turbines 26 and 27 (Crossing 21). Appendix C-7 contains a photo of these areas.

Wetlands 135 and 136 are adjacent to USGS-mapped streams along the northern section line, and both are saturated swales with no defined or bank, and are dominated by reed canary grass. They may be temporarily impacted during construction of the aboveground 115 kV transmission line (Crossings 22 and 25), but permanent impacts would be avoided by placing the poles in adjacent uplands and spanning the wetlands.

An additional USGS stream is mapped in the northeast quarter section and will be crossed by the proposed underground cabling. Field investigations determined that no defined channel or wetland conditions are present at this location and the hydrology is likely drained by tile lines.

Section 33, T112N, R48W (Figure 15)

Proposed activities would occur in fenced pastures, tilled agricultural fields, planted grasslands and windbreaks. Four wetland areas were delineated in the eastern half of the section (Wetlands 21, 22, 24, & 103), within the riparian zones of mapped USGS streams. These wetland complexes exhibit similar characteristics as Wetland 25 (described in Section 24, T112N, R48W), and are pictured in Appendices C-8 and C-9. Wetland 23 was an excavated stock pond just south of Wetland 24. Temporary impacts to Wetlands 21 and 103 would occur as a result of trenching in underground cabling. Two crossings will occur in Wetland 21, as two separate drainage swales are crossed

(Crossings 23a and b). Wetland 103 would be crossed in four separate locations (Crossings 24a, b, c, and d). The current layout avoids impacts to Wetlands 22, 23 and 24.

The NWI and maps provided by the USFWS of wetland easements identified several wetlands in the southwest quarter of the section. Field investigations determined wetland characteristics are present in two areas in the vicinity of proposed project facilities, both north of Turbine 166 (Wetlands 101 and 102); in general the field delineated boundaries were slightly larger than those shown on the USFWS easement maps. These wetlands are characterized by seasonally flooded hydrology and dominated by water smartweed, curly dock (*Rumex crispus*) and dark-green bulrush. The current layout avoids all temporary and permanent impacts to wetlands in the USFWS wetland easement (both field delineated and as mapped by the USFWS). Wetland 102 is characterized by sample plot 102 Wetland.

Section 32, T112N, R48W (Figure 15)

Proposed activities are located in tilled agricultural fields. No wetlands were identified or delineated in the vicinity of project facilities.

Section 26, T112N, R48W (Figure 16)

Proposed activities would occur in a tilled agricultural field. No wetland or stream features are located in the vicinity the proposed Project facilities in this section.

Section 27, T112N, R48W (Figure 16)

Proposed activities would occur in tilled crop fields and a hay field. A USGS-mapped stream flowing west of Turbine 55 has a defined bed and bank and its riparian zone has semi-permanently-flooded wetland characteristics. This area was delineated as Wetland 34, and its plant community is dominated by reed canary grass and upright sedge. Temporary impacts will occur at this location as a result of trenching in underground cabling (Crossing 27). Appendix C-9 contains a photo of this wetland.

The mapped stream located east of Turbine 56 lacks a defined channel or flow and is under agricultural production. It was determined to be non-wetland.

Wetland 33 was delineated in the upper reaches of a gently sloping drainage swale between Turbines 57 and 58. It is dominated by reed canary grass and features seasonally flooded hydrology. This PEMC wetland would be avoided by the current layout.

Wetland 35 is associated with the eastern road ditch of 481st Avenue, and Wetlands 127 and 128 are wet swales adjacent to USGS-mapped streams along the southern section line. All three wetlands are dominated by reed canary grass and exhibit saturated hydrology (PEMB). No defined bed or banks are present within these wetlands. Wetland 35 will be spanned by the aboveground transmission line

but could be temporarily impacted during construction activities (Crossing 26). Wetland 35 is pictured in Appendix C-10. The layout avoids impacts to Wetlands 127 and 128.

Section 28, T112N, R48W (Figure 17)

Proposed facilities are located in tilled agricultural fields, and portions of a farmstead. A USGS-mapped stream in the southwest quarter of the section would be crossed by underground cabling; however, field investigations at this location determined that no defined channel was present, and the area was cropped. No wetland features were identified at this location. Wetland 52 is adjacent to a USGS stream along the northern section line, but does not have a defined bed or bank. This saturated emergent wetland is dominated by reed canary grass and upright sedges. Under the current layout this wetland would be avoided by siting the transmission line on the north side of the highway. Appendix C-10 shows a photo of this wetland.

Wetlands 36 and 37 are located northeast of Turbine 53. These wetlands are isolated, temporarily-flooded basins under agricultural production. A wetland data sheet was prepared for Wetland 36 and is included in Appendix B. No data sheet was prepared for upland areas surrounding Wetland 36 as it is in agricultural production. Wetland 38 is located in a gently sloping wet swale surrounding a USGS-mapped stream. Wetland 38 is dominated by reed canary grass and water smartweed. Wetland 45 is a stock pond that is mapped by the NWI in the southeast quarter of the section. It is dominated by reed canary grass around the edges of an excavated, open-water pond. The current layout avoids all impacts to Wetlands 36, 37, 38, and 45.

Section 29, T112N, R48W (Figure 17)

Proposed activities would be located in tilled crop fields, haylands, pasture and windbreaks. USGS-mapped streams located northwest of Turbine 50 and south and west of Turbine 48 were found to be not present and likely had been tile drained. Healthy crops were observed throughout these locations, and no indicators of wetland hydrology were present.

Wetlands 48 and 111 were delineated in the northwest quarter, in the road ditch south of 200th Street. These wetlands are dominated by reed canary grass and exhibit saturated hydrology. Under the current configuration these wetlands would not be impacted.

Section 30, T112N, R48W (Figure 18)

Proposed activities would occur in tilled crop fields. Three wetlands (Wetlands 40, 41 & 43) were delineated east of Turbine 46. They are dominated by reed canary grass, upright sedge, curly dock and Dudley's rush (*Juncus dudleyi*). The NWI indicates a wetland south of Turbine 45. During the field visit, no wetland was found within 500 feet of the proposed turbine; the area between the turbine and the wetland consisted of healthy soybean and no evidence of wetland hydrology was observed. No wetland impact will occur in this section.

Section 25, T112N, R49W (Figure 18)

Proposed activities would occur in tilled crop fields. Wetland 109 is located within a pasture north of Turbine 42. It is located in a gently sloping drainage swale dominated by upright sedge, reed canary grass and quack grass (*Elytriyia repens*), and soils within the wetland were saturated to the surface. A fence line separates the wetland from the proposed access road to Turbine 42, and wetland impacts will be avoided by the current layout.

Wetland 121 is located south of Wetland 109, east of Turbine 42. It is a small, isolated, farmed depression and is dominated by stunted soybeans. This wetland will be avoided by the proposed development. The access road is proposed to run through the upland area between Wetlands 109 and 121, and the cabling between Turbines 42 and 43 will run south of Wetland 121.

Wetland 105 is located in a tilled crop field and generally lacks vegetation except for stunted corn. The surface was flooded at the time of the site visit. This NWI-mapped wetland would be temporarily impacted from trenching in the underground cabling (Crossing 28). Wetland 105 is characterized by sample plot 105 Wetland. Appendix C-11 contains a photo of this wetland area.

Wetland 122 was delineated in a drainage swale between Turbines 40 and 41. The saturated emergent wetland is dominated by reed canary grass and is located north of the proposed access road. The portion of the drainage south of the wetland was cropped and was determined to be upland. No impacts would occur to Wetland 122.

The NWI also indicated a wetland in the northeast quarter of the section, west of proposed underground cabling, which was determined to be effectively drained during the site visit; no wetland hydrology indicators were observed, and the crop showed no signs of stress.

Section 23, T112N, R48W (Figure 19)

Under the current layout, no facilities are proposed in this section. No wetlands were delineated in this section.

Section 22, T112N, R48W (Figure 19)

Proposed activities would occur in tilled agricultural fields. The access road servicing Turbine 76 would cross a USGS-mapped stream along the section's northern border. This same mapped USGS stream is also crossed by the access road and underground cabling between Turbines 74 and 75. Field investigations to these locations determined that no wetland or stream characteristics are present at these locations. The northern crossing is a broad drainageway dominated by timothy (*Phleum pretense*), smooth brome (*Bromus inermis*), and common dandelion (*Taraxacum officinale*), with no evidence of wetland hydrology. The southern crossing was observed to be tile-drained with no indicators of hydrology, and completely cropped with no hydrophytic vegetation. No wetland or stream impacts would occur at either of the proposed USGS-mapped stream crossings.

Wetland 54 was located just south of a proposed access road in the southwest quarter section. It is dominated by reed canary grass, and is similar to Wetland 53, described below in Section 21, T112N, R48W. This wetland would not be impacted by access road or cable installation.

Two wetlands (Wetlands 55 & 56) were delineated in the northeast quarter of the section, on the west and east sides of a proposed access road. Wetland 55 is mapped as wetland by the NWI; Wetland 56 is not. These isolated wetlands have temporarily flooded hydrology. Water smartweed, common ragweed (*Ambrosia artemisiifolia*) and stunted corn are the dominant vegetation. The proposed access road to Turbine 76 will permanently impact Wetland 55 (Crossing 29). Appendix C-11 shows a photo of this wetland area. Impacts to Wetland 56 would be avoided by the current layout

Section 21, T112N, R48W (Figure 20)

Proposed activities in this section would occur in tilled crop fields. A USGS-mapped stream in the vicinity of Turbine 73 was found to have a defined channel and wetland characteristics. Wetland 53 is associated with this stream, and includes a portion of the adjacent road ditch. It is dominated by reed canary grass, broad-leaved cattail, willow (*Salix* sp.) and common horsetail (*Equisetum arvense*) and has seasonally flooded hydrology. The proposed access road was shifted toward the south to avoid permanent impact to Wetland 53. Underground cabling crossing this wetland would result in temporary impacts from trenching activities (Crossing 30). Appendix C-12 contains a photo of this wetland area.

Wetland 51 is adjacent to a USGS-mapped stream, where it flows underneath County Highway 44. Temporary impacts could occur to this wetland during construction of the aboveground 115 kV transmission line (Crossing 31), but permanent impacts would be avoided by siting poles in the adjacent uplands and spanning the wetland.

An NWI-mapped wetland (Wetland 106) was delineated along the north side of the access road between Turbines 72 and 73. The isolated, farmed, temporarily-flooded wetland consisted of

stunted or drowned out corn. The current layout avoids this wetland. This wetland is pictured in Appendix C-12.

The NWI maps two additional wetlands south of Turbine 73 in the vicinity of underground cabling. These areas were found to be cropped in corn, with no evidence of hydrology, no hydrophytic vegetation, and no discernable topographic depressions; therefore, they were determined to be non-wetland.

Section 20, T112N, R48W (Figure 20)

Proposed activities in this section would occur in crop fields and edge of the County Highway 44 road ditch on the southern section border. Field investigations of a USGS-mapped stream between Turbines 69 and 70 determined that there is no defined channel but wetland conditions are present (Wetland 50). Dominant vegetation at this location is giant golden rod, common dandelion, field sow-thistle (*Sonchus arvensis*) and upright sedge. Wetland 50 would be temporarily impacted by trenching in underground cabling (Crossing 32). The upland and wetland sides of the delineated boundary are characterized by sample plots 50-Upland and 50-Wetland, respectively. A photo of the wetland is included in Appendix C-13.

Wetlands 70 and 47 are located downstream from Wetland 50 and to the southwest of the proposed turbines. These wetlands are dominated by reed canary grass, broad-leaved cattail and upright sedge, and are characterized by semi-permanently flooded hydrology. The stream at this point has a 4-foot wide defined bed and reed canary grass-dominated fringe. Wetland 70 would be avoided under the current layout.

Wetland 47 includes a defined bed and bank, and may be temporarily impacted as a result of aboveground transmission line construction; the aboveground route crosses the stream at five locations (Crossings 33a-e). The maximum width of this wetland will allow it to be spanned by the aboveground line with pole structures placed in uplands, and no permanent impacts will occur. A photo of Wetland 47 is included in Appendix C-13.

Wetland 71 was delineated along a USGS-mapped stream channel, adjacent to 479th Avenue on the western edge of the section. It consists of a reed canary grass-dominated fringe around a 5-foot wide stream channel that flows under the road toward the west. Under the current layout, the aboveground transmission line will be on the west side of the road, so no impacts will occur. Appendix C-15 shows this wetland.

Wetland 77 was delineated along a USGS stream on this section's western boundary. This wetland flows under the road toward the west. The dominant vegetation is reed canary grass and prairie cord grass. The current layout avoids all impacts to this wetland.

Section 19, T112N, R48W (Figure 21)

Proposed activities would take place in tilled crop fields, planted grasslands, and pasture. Wetlands 61 and 63 were delineated along the northern section line, associated with USGS-mapped streams. Wetland 61 is located within the riparian zone of Sixmile Creek. It is dominated by reed canary grass. Wetland 63 is located along an unnamed tributary to Sixmile Creek that lacks a defined channel. This wetland is dominated by reed canary grass, broad-leaved cattail, sandbar willow and black willow (*Salix nigra*). These wetlands are avoided by the current layout.

Wetland 72 is associated with Sixmile Creek, which has a defined channel and bank at this location, with approximately 6 to 18 inches water depth. Dominant vegetation in this wetland is reed canary grass, upright sedges and water smartweed. Although an underground cabling crossing was proposed at the time of the field visit, the current layout avoids impacts to this portion of Sixmile Creek.

Wetland 73 was delineated in an old oxbow outside of the current channel of Sixmile Creek. This wetland is dominated by upright sedge, reed canary grass and prairie cordgrass, and has saturated hydrology. It may be temporarily impacted during aboveground transmission line construction (Crossing 34), but will be spanned with pole structures placed in adjacent uplands; it will not be permanently impacted.

Wetland 75 is located in an isolated depression near the section's eastern border and is mapped by the NWI. It is dominated by reed canary grass and demonstrates temporarily flooded hydrologic conditions. This wetland will not be impacted by proposed activities.

Wetland 76 is located in the northeastern corner of the section and is associated with a USGS-mapped stream that is an unnamed tributary to Sixmile Creek. The dominant vegetation in this wetland is reed canary grass, prairie cordgrass and upright sedge, with scattered black willow. Although the current layout shows the BRII-North Project Substation encroaching on Wetland 76, it will be possible to design the final substation footprint to avoid wetland impact. This wetland may be temporarily impacted during aboveground transmission line construction but will not be permanently impacted (Crossing 37).

Wetland 78 is located in the southeast quarter, fringing a USGS-mapped stream that flows through planted grassland. The drainage at this location lacks a defined bed and bank. Vegetation is dominated by reed canary grass, prairie cordgrass, broad-leaved cattail and sandbar willow. Soils at this location are saturated to the surface. Sample plot 78 Wetland characterizes the wetland side of the delineated boundary; no upland sample was collected as the surrounding upland was in crop production. The sample plot was collected to the northwest of the proposed cabling crossing because a crossing for an access road was proposed in a previous version of the site layout. The access road is no longer proposed in the current layout, thus avoiding permanent impacts to Wetland 78. This wetland would be temporarily impacted as a result of underground cabling installation (Crossing 35). Appendix C-14 displays this wetland.

Wetland 120 is situated north of Wetland 72, in the riparian zone of Sixmile Creek, a USGS-mapped stream. The stream has a defined channel and bank at this location and features semi-permanently flooded hydrologic conditions. Dominant vegetation in this wetland is reed canary grass, upright sedges and water smartweed. The underground cabling is proposed to cross this stream (Crossing 36). Appendix C-14 contains a photo of this wetland area.

Several NWI-mapped wetlands are indicated in the vicinity of Turbine 65. Field visits to these locations determined that these areas are under crop production, and no indicators of wetland hydrology were observed; therefore, no wetlands are present.

Section 24, T112W, R49W (Figure 21)

Proposed activities would occur within tilled crop fields, hayland and along a minimum maintenance farm road in this section.

Wetland 79, adjacent to a USGS stream, was delineated in a low, grassy drainage swale with no defined channel between Turbines 62 and 63. Dominant vegetation in this wetland is reed canary grass and stinging nettle. Soils throughout the wetland were saturated to the surface. This wetland would be temporarily impacted by trenching during installation of underground cabling (Crossing 39). Wetland 119 was delineated in the southwest corner of the section. The wetland plant community is dominated by dark-green bulrush, reed canary grass and giant reed (*Phragmites australis*); no defined bed and bank is present at this location. This wetland is in the vicinity of the proposed access road, but should not be impacted by the improvements to the minimum maintenance road.

Wetland 107 was mapped by the NWI and is dominated by upright sedge, short-awned foxtail and kochia (*Kochia scoparia*). It will not be impacted by proposed activities. A wetland data sheet was prepared for this wetland and is included in Appendix B. No upland data point was collected as the surrounding area is under crop production.

Wetland 80 was located in a wet, grassed waterway in the vicinity of Turbine 62. The wetland plant community is dominated by giant goldenrod, dark-green bulrush and Kentucky bluegrass (*Poa pratensis*). It drains toward the southeast, but lacks a defined channel and is isolated from surface waters. This wetland would be temporarily impacted as a result of underground cabling installation (Crossing 40). Appendix C-16 shows this wetland.

Section 14, T112N, R48W (Figure 22)

No project facilities are proposed in this section, and no delineations were performed.

Section 15, T112N, R48W (Figure 22)

The current layout has no facilities within this section. Wetlands near facilities under a preliminary layout were delineated and are described below.

Wetland 58 was delineated in the southwest quarter of the section within the road ditch, adjacent to a grassed waterway that is mapped as a stream by the USGS. The majority of the drainage swale is dominated by smooth brome grass and common dandelion. Wetland 58 was a small low area in the adjacent road ditch dominated by reed canary grass. Soils in the wetland were saturated to the surface. This wetland will not be impacted by proposed facilities.

An NWI-mapped wetland (Wetland 110) located along the northern section line was delineated for a preliminary layout, but the proposed facilities have since been eliminated from the plan. This PEMC/PEMB wetland is dominated by reed canary grass, dark-green bulrush, and soft-stem bulrush (*Scheonoplectus tabernaemontani*). No impacts would occur to Wetland 110 under the current layout. Appendix C-16 shows a photo of this wetland.

Section 16, T112N, R48W (Figure 23)

Proposed activities would occur in a tilled crop field. A grassed drainage swale would be crossed by the access road to the east of Turbine 90. It was not mapped as wetland by the NWI or USGS. The plant community in this area was dominated by Kentucky bluegrass, smooth brome grass, and common dandelion. It was determined to be non-wetland because it lacked a hydrophytic plant community.

A wetland was delineated in the southeast quarter of the section (Wetland 57) in the road ditch. This temporarily-flooded emergent wetland is dominated by reed canary grass, and will not be impacted by the proposed facilities.

Section 17, T112N, R48W (Figure 23)

Proposed activities would occur in a tilled agricultural field. Two drainage swales visible on the 2008 aerial photo to the east and west of Turbine 87 were field examined and determined to be non-wetland based on lack of hydrophytic plant communities or evidence of wetland hydrology.

The NWI indicated a wetland approximately 400 feet east of Turbine 88. A USGS-mapped stream was also indicated in this location. This area was not field examined, but an approximate boundary was digitized based on the 2008 aerial photo, and this wetland would be avoided by Project facilities. No wetland impacts are anticipated in this section.

Section 18, T112N, R48W (Figure 24)

Proposed activities would occur in tilled crop fields, planted grasslands, and pasture. A USGS stream in the southwest quarter of the section is proposed to be crossed in two locations by the electrical system (Crossings 38 and 43). Field observations at these locations determined that although no defined channel exists, both areas are PEMB grassed waterways dominated by reed canary grass, which flow southward to Sixmile Creek in Section 19, T112N, R48W. Wetland 62 would be spanned by the aboveground line along the north side of 199th Street (Crossing 38), but

pole structures placed on adjacent uplands would avoid permanent wetland impact. Wetland 66 (Crossing 43) would be temporarily impacted by trenching during the installation of underground cabling. Sample plots 66 Wetland and 66 Upland characterize the wetland and upland sides of the Wetland 66 boundary, respectively. Appendix C-17 displays Wetlands 62 and 66.

Field investigations of another USGS-mapped stream in the east half of the section (Sixmile Creek) determined that a defined bank and channel are present, with wetland in its riparian zone (Wetland 60). The saturated emergent wetland is dominated by reed canary grass. Wetland 60 and the adjacent stream channel will be spanned by the aboveground transmission line (Crossing 42). Appendix C-18 displays this wetland.

Wetland 65 was delineated in the southwest quarter of the section, in a grassy swale that drains from the road ditch along 478th Avenue toward the east to a tributary of Sixmile Creek. The PEMB wetland is dominated by reed canary grass, and there is no defined bed and bank. It would be spanned by the proposed aboveground transmission line (Crossing 44), but could be temporarily impacted during construction. Appendix C-18 displays this wetland.

Wetland 59 is located in the southeast quarter of the section near Turbine 86. This wetland is dominated by reed canary grass and water smartweed, and drains toward the north into a tributary of Sixmile Creek. This wetland would be impacted temporarily by trenching during installation of the underground cabling (Crossing 41). Sample Plot locations 59 Wetland and 59 Upland characterize the wetland and upland sides of the delineated boundary, respectively. See Appendix C-19 for a photo of this wetland.

Wetland 64 is located north of Turbine 84 in a low grass drainageway flowing east to Sixmile Creek. Its vegetation is dominated by reed canary grass, giant reed and sandbar willow. This PEMB wetland will not be impacted by the proposed facilities.

Section 13, T112N, R49W (Figure 24)

Proposed activities would take place in tilled crop fields. Wetland 108 is adjacent to a USGS stream that would be crossed by proposed underground cabling. Wetland 108 is a PEMA drainage dominated by reed canary grass, curly dock and blue vervain (*Verbena hastata*). It drains towards the south and west to Deer Creek, but has no defined channel. This wetland will be temporarily impacted by underground cabling installation (Crossing 45). Appendix C-19 displays this wetland.

A USGS-mapped stream located south of Turbine 146 was not GPS-delineated, but was found to be present during the site visit. The wetland boundary was digitized based on crop signatures on the 2008 aerial photo, and is located approximately 370 feet south of the proposed turbine. It will be avoided by proposed facilities.

Wetland 67 is an isolated, farmed depression mapped by the NWI north of Turbine 82. It consisted of drowned out soybeans and scattered water smartweed. Wetland 67 would not be impacted by the proposed facilities.

The NWI indicates several wetlands to the south of Turbines 81 and 82, but during field visits no hydrophytic plant communities or evidence of wetland hydrology were observed in these locations.

Section 10, T112N, R48W (Figure 25)

Proposed activities would take place in a tilled crop field and pasture. Wetland 114 is located in a swale between Turbines 150 and 151. This wetland and the adjacent uplands are a high quality native plant community. The wetland plant community is dominated by upright sedge, smooth brome, dark-green bulrush, sawtooth sunflower (*Helianthus grosseserratus*), common milkweed and prairie rose. Because of the steep slopes, the adjacent upland areas were not grazed, and therefore had a native prairie community, dominated by smooth brome, pale purple coneflower, yellow coneflower, lead-plant, ox-eye, hoary vervain, purple prairie clover, white prairie clover and silverleaf scurfpea. This area was avoided to minimize impacts to native prairie resources. Wetland 114 and the native prairie on the side slopes would not be impacted by the current layout.

Wetland 115 was delineated in the lower portions of a grassy drainage ravine, situated between two high ridgelines. This PEMB wetland is dominated by upright sedge. The wetland will be avoided under the current layout. The wetland and upland sides of the delineated boundary are characterized by Sample Plots 115 Wetland and 115 Upland, respectively. A photo of this wetland is shown in Appendix C-20.

Wetland 89 was delineated in a grazed pasture in the northwest quarter of the section. Dominant wetland vegetation includes upright sedge, dark-green bulrush and prairie cordgrass. Upland vegetation is dominated by smooth brome, prairie smoke (*Geum triflorum*) and prairie rose, plus up to seven other native prairie forbs that could not be identified to the species level at the time of the field visit. Wetland 89 will be avoided because the underground cabling was realigned to the north to avoid the relatively high quality wetland plant community and prairie remnant in the adjacent upland.

Section 9, T112N, R48W (Figure 25)

Proposed activities would be located in tilled crop fields. Two USGS-mapped streams are located in the vicinity of proposed facilities in this section. Field visits to these locations determined that they are cropped, no defined channel is present, and no hydrophytic plant communities or evidence of wetland hydrology was observed. Therefore, mapped streams located west of Turbine 106, between Turbines 156 and 157, and east of Turbine 157 were determined to be neither streams nor wetlands.

Wetland 88 is located in a deep drainage ravine north of Turbine 109, and is dominated by reed canary grass and broad-leaved cattail. The PEMC wetland lacks a defined channel, but drains through a culvert under 481st Avenue. Wetland 88 will be temporarily impacted as a result of trenching in underground cabling (Crossing 46). Appendix C-20 shows this wetland.

Wetland 90 is located south of Turbine 109 surrounding an impoundment but will not be impacted by the current layout proposed for this section.

Section 8, T112N, R48W (Figure 26)

Proposed activities would occur in tilled crop fields. Wetland 87 is located adjacent to a USGS stream in a grassy drainage swale between two crop fields and lacks a defined channel; it is vegetated with reed canary grass. This PEMA wetland would be temporarily impacted as a result of underground cabling (Crossing 47). Appendix C-21 shows a photo of this wetland.

The NWI indicated a wetland southeast of Turbine 102, but this location was found to lack a hydrophytic plant community or evidence of hydrology, and was cropped. Therefore, it was determined to be non-wetland. The access road to Turbine 105 and underground cabling would avoid the NWI-mapped wetlands located 200 feet to the south.

Section 7, T112N, R48W (Figure 26)

Proposed activities would occur in tilled crop fields and pasture. Sixmile Creek flows across the section from north to south. The stream meanders in a defined channel through grazed pasture and is bordered by moderate slopes. Wetland 86 was delineated within the channel and is dominated by reed canary grass and sedges, with saturated soils along the edges of the channel. Water in the channel itself was 12 to 24 inches deep. Wetland 86 would be crossed by underground cabling (Crossing 48). Appendix C-21 displays this wetland.

Wetland 117 is located in the northeast quarter of the section, adjacent to 478th Avenue. The wetland is part of a drainage swale in a crop field (soybeans) that drains down toward the southwest to Sixmile Creek. The swale was not cropped, but had been plowed since the planting season, and vegetation consisted of spikerush (*Eleocharis* sp.). This wetland will not be impacted by proposed facilities. Appendix C-22 contains a photo of this wetland area.

Three other wetlands were identified in low, grassy drainage swales and riparian areas along the section's western border. No defined stream channels are present at these locations, but all three drain toward the east to Sixmile Creek. These PEMB wetlands, Wetlands 74, 83 and 84, are dominated by reed canary grass, with scattered broad-leaved cattail. Wetland 83 is mapped by the USGS as a stream, but Wetlands 74 and 84 are not indicated by either the USGS or the NWI. These wetlands could be temporarily impacted during aboveground transmission line construction, but no

permanent impacts are expected as they will be spanned (Crossings 49-51). Appendix C-22 displays Wetland 83.

Section 12, T112N, R49W (Figure 27)

Proposed activities would take place in tilled crop fields and hayland. Wetland 116, indicated as a USGS stream and NWI-mapped wetland, was delineated in the riparian zone of the stream in an area where two grassy drainage swales converge. The PEMB wetland extends upslope into both drainage swales. Dominant vegetation in the wetland is upright sedge, reed canary grass, giant goldenrod, prairie cordgrass, and white dogbane (*Apocynum cannabinum*). The wetland lacks a defined channel but flows toward the south, eventually to Deer Creek. The adjacent uplands consist of a narrow area of hayland dominated by smooth brome grass. The delineated wetland area would be temporarily impacted in two locations (both drainage swales) by trenching for the installation of proposed underground cabling (Crossings 52a and b).

Wetlands 81, 82 and 85 were delineated in the field for a preliminary layout, but the current layout has no facilities proposed in the vicinity of these wetlands. The NWI does not indicate any other wetlands in the vicinity of proposed facilities in this section. The upper end of a drainageway was inspected between Turbines 97 and 98, but was found to be cropped in healthy soybeans, with no evidence of wetland hydrology. No impacts would occur to these wetlands under the current layout.

Section 11, T112N, R49W (Figure 27)

Proposed activities would occur in tilled crop fields. USGS mapping indicates a stream originating in the northeast quarter of the section, just south of the access road from 477th Avenue. Field investigations to this location determined that the area is dominated by smooth brome, and is non-wetland.

No wetland impacts are expected as a result of proposed activity in this section.

Section 1, T112N, R48W (Figure 28)

No project facilities are proposed in this section, and no delineations were performed.

Section 2, T112N, R48W (Figure 28)

Proposed activities would occur in tilled crop fields. An NWI-mapped stock pond is located to the east of the access road in the southwest quarter section. This wetland is dominated by reed canary grass and broad-leaved cattail. It was not GPS-delineated, but an approximate boundary was digitized from the 2008 aerial photo. It will not be impacted by the proposed facilities.

Section 3, T112N, R48W (Figure 29)

Proposed activities would occur in tilled crop fields, planted grasslands, pasture, rangelands, and haylands. Portions of a USGS-mapped stream with a defined channel and adjacent wetland fringe

were delineated as Wetlands 98 and 113. Wetland 98 was delineated in grazed pasture and rangeland and situated within the riparian zone of a low drainage swale. Water in the defined channel ranged in depth from 12 to 24 inches, with saturated soils in the wetland outside the channel. Dominant vegetation in the wetland is upright sedge and Pennsylvania buttercup (*Ranunculus pensylvanicus*). This wetland will be temporarily impacted by trenching during installation of underground cabling (Crossing 54). The upland and wetland sides of the delineated boundary are characterized by sample plots 98 Upland and 98 Wetland, respectively. A photo of this wetland is displayed in Appendix C-23.

Wetland 113 is a saturated emergent stream fringe, dominated by reed canary grass and water smartweed, which narrows to the channel width approximately 200 feet south of 198th Street. The stream and wetland will not be impacted by proposed activities in this section.

Wetland 99 is a stock pond located just outside the stream channel delineated as Wetland 98. It consists of an excavated depression of open water, surrounded by a narrow fringe of reed canary grass and upright sedge. This wetland could be temporarily impacted as a result of trenching in underground cabling (Crossing 53). Wetland 99 is displayed in Appendix C-23.

Downstream from proposed facilities along 197th Street, an additional wetland was delineated adjacent to the stream channel. Wetland 100, which exhibits similar characteristics as Wetland 98, will not be impacted by proposed activities.

A swale between two NWI-mapped wetlands, which would be crossed by underground cabling in the northeast quarter section, was inspected during field investigations. It was found to be cropped through on the west side of the fence line, and dominated by smooth brome and Kentucky bluegrass on the east side of the fence line. Therefore, it was determined to be non-wetland.

An NWI-mapped wetland located along the access road between Turbines 135 and 136 was determined to be non-wetland because it was cropped with no plant stress evident or any evidence of wetland hydrology.

Section 4, T112N, R48W (Figure 29)

Proposed activities would occur primarily in tilled crop field, with small areas of hayland and a tree row. Wetland 97 was delineated adjacent to a USGS-mapped stream. The PEMB wetland is dominated by upright sedge and Pennsylvania buttercup, and is situated in a low drainage swale that lacks a defined bed and bank. This wetland would be temporarily impacted as a result of underground cabling installation (Crossing 55). Appendix C-23 contains a photo of this wetland area.

Wetland A3-1 was delineated adjacent to a USGS-mapped stream in the northwest quarter section. This saturated emergent drainage swale did not have a defined bed or bank and was dominated by

reed canary grass. It would be temporarily impacted by trenching during installation of underground cabling (Crossing 56).

Section 5, T112N, R48W (Figure 30)

Proposed activities would occur in a tilled crop field. A USGS-mapped stream is located to the north of the proposed access road, although it is avoided by the current layout. The access road would run across a grassy drainage swale that drains north in the road ditch along 479th Avenue to the USGS-mapped stream. The swale was observed to lack a hydrophytic plant community, and is therefore non-wetland. The plant community in the swale was dominated by Canada thistle, smooth brome, giant ragweed, and lambsquarters (*Chenopodium album*). The surrounding field was cropped in corn.

No impacts to wetlands or streams are proposed in this section.

Section 6, T112N, R48W (Figure 30)

Proposed activities would occur in tilled crop fields and haylands. Sixmile Creek, a USGS-mapped stream meanders from north to south through the western half of the section. Wetland 95 was delineated along the riparian zone of the stream's defined channel. This wetland is dominated by upright sedge, reed canary grass and broad-leaved cattail. A defined bed and bank is present, and the wetland fringe ranges from 3 to 20 feet wide. Underground cabling is proposed to cross this wetland (Crossing 58). A photo of this wetland is shown in Appendix C-24. The aboveground line would avoid impacts to Wetland 95 by spanning the 330 foot stream/wetland segment with pole structures placed in adjacent uplands.

Several drainage swales and NWI-mapped wetlands are located along the section's western border, in the vicinity of the proposed aboveground line. Wetlands 91 and 93 were identified and delineated within low drainage swales upslope from Sixmile Creek in these locations. These PEMB wetlands are dominated by reed canary grass. Wetlands 91 and 93 could be temporarily impacted as a result of construction activity related to the aboveground line, but will not be permanently impacted as poles will be placed outside the wetland boundaries (Crossing 57). Wetland 91 is displayed in Appendix C-24.

Wetland 126 is a saturated emergent grassy swale adjacent to a USGS stream, and located northwest of the proposed O & M facility and temporary laydown area. The wetland is dominated by reed canary grass and would be avoided by the proposed layout.

An additional NWI-mapped wetland was indicated in the northwest quarter near the proposed aboveground transmission line. Field visits to this location determined that it is non-wetland based on lack of a hydrophytic plant community (dominated by smooth brome), evidence of wetland hydrology, or a topographic depression.

Section 1, T112N, R49W (Figure 31)

Proposed activities would occur in tilled crop fields and windbreaks. A USGS-mapped stream was indicated in the vicinity of Turbine 121. Field investigations to this location determined that the area is under crop production and no hydrophytic plant communities or evidence of wetland hydrology are present at this location.

Wetland 94 was delineated adjacent to a USGS stream along the north edge of a wooded farmstead and the west side of 478th Avenue. Vegetation in the wetland is dominated by reed canary grass, broad-leaved cattail and eastern cottonwood (*Populus deltoides*). No impacts would occur to this PEMB wetland.

Two NWI-mapped PEMB wetlands were delineated along the section's eastern border. Wetland 92 is dominated by reed canary grass. Wetland 96 is dominated by reed canary grass, upright sedge, giant goldenrod, prairie cordgrass and sandbar willow. These wetlands will be avoided by the current layout.

Section 2, T112N, R49W (Figure 31)

Proposed activities would occur in tilled crop fields and haylands. A steeply sloping grassy swale dominated by smooth brome grass extends down from the access road near Turbine 116 to a USGS-mapped stream north of the turbine. The stream itself is located 400 feet north of the proposed turbine at its closest point.

Wetland 112 is located in a grassy swale between Turbines 118 and 119, which drains into the stream to the northwest. The PEMB wetland has no defined bed or bank, and is dominated by prairie cordgrass, reed canary grass and dark green bulrush. This wetland would be temporarily impacted by trenching as a result of underground cabling installation (Crossing 59). Appendix C-25 displays this wetland.

Section 3, T112N, R49W (Figure 32)

Proposed activities would occur in tilled crop fields. No USGS streams, NWIs or field identified wetlands are located in the vicinity of proposed facilities in this section.

Section 4, T112N, R49W (Figure 32)

No Project facilities are proposed in this section, and no wetlands were delineated.

Section 35, T113N, R48W (Figure 33)

No Project facilities are proposed in this section, and no wetlands were delineated.

Section 34, T113N, R48W (Figure 33)

Proposed activities would occur in pasture and planted grassland. Wetland J12-1 is an isolated basin dominated by reed canary grass, and would not be impacted by the current layout.

Wetland J12-2 is a large temporarily-flooded wetland fringe to a USGS stream east of Turbine 186. It was dominated by reed canary grass, was heavily grazed, and lacked a defined bed or bank. Wetland J11-2 will not be impacted by the current layout.**Section 33, T113N, R48W (Figure 34)**

Proposed activities would occur in tilled crop fields. Wetlands J11-1, J11-2, and J11-3 were delineated along the western edge of the section for a previous route of the proposed 115 kV aboveground transmission line. Wetland J11-1 is a temporarily-flooded forested wetland dominated by black willow (*Salix nigra*) and horsetail (*Equisetum* sp.). Wetland J11-2 is a saturated emergent fringe of a USGS stream. It does not have a defined bed or bank and is dominated by reed canary grass. Wetland J11-3 is a seasonally-flooded drainageway mapped as wetland by the NWI. It does not have a defined bed or bank, and is dominated by reed canary grass and cattail. No impacts are proposed to Wetlands J11-1, J11-2 or J11-3 under the current layout.

Wetland J11-4 is a seasonally-flooded and saturated emergent wetland adjacent to a mapped USGS tributary stream, flowing toward the south. The main stream channel bottom is approximately 2-3 feet deep and 3 to 4 feet wide. The adjacent wetland is a broad fringe of reed canary grass, sedges, and prairie cordgrass that is heavily grazed by cattle. This wetland could be temporarily impacted by installation of the underground collection system (Crossing 60).

A USGS stream mapped between Turbines 183 and 184 was determined to be non-wetland because it was cropped through and lacked indicators of wetland hydrology or hydrophytic vegetation.

Section 32, T113N, R48W (Figure 34)

Proposed activities would occur in tilled crop fields. No NWI wetlands or USGS streams are mapped in the vicinity of proposed facilities. Two wetlands that were near facilities proposed for a preliminary layout were delineated in the section.

Wetland J10-1 is a saturated emergent fringe of a mapped USGS stream channel. The channel bottom is 2-3 feet wide, and approximately 2 feet deep; a broad wetland fringe bordering the stream is dominated by reed canary grass, prairie cordgrass, and curly dock. Wetland J10-2 is also a saturated emergent basin dominated by reed canary grass, surrounded by pasture at the north end of a farmstead. It drains through a shallow gully toward the north into Wetland J10-2.

No impacts would occur to these wetlands under the current layout.

Section 31, T113N, R48W (Figure 35)

Proposed activities would occur in tilled crop fields. Wetland J9-1 is a saturated emergent drainageway mapped as a USGS stream to the northwest of Turbine 189. It is dominated by reed canary grass and does not have a defined bed or bank. It will be temporarily impacted during installation of underground cabling (Crossing 61).

A grassed waterway between Turbines 190 and 191 that drained toward the north into the USGS stream was examined during field investigations and found to be non-wetland based on lack of a hydrophytic plant community or indicators of hydrology.

Section 36, T113N, R49W (Figure 35)

Proposed activities would occur in tilled crop fields. Wetland J8-1 is a seasonally-flooded drainageway mapped as a USGS stream between Turbines 179 and 180. It is dominated by cattails and does not have a defined bed or bank. It will be temporarily impacted during installation of underground cabling (Crossing 62).

A USGS stream indicated to the south of Turbine 179 will be crossed by an access road and underground cabling. This area was determined to be non-wetland during field investigations because it had been cropped and lacked any evidence of hydrology or a hydrophytic plant community. Section 35, T113N, R49W (Figure 36)

Proposed activities would occur in tilled crop fields. Wetland J7-2 is located in a grassy swale mapped as a USGS stream in the southwest quarter section. It will not be impacted under the current layout.

Wetland J7-1 is a wet grassed waterway between Turbines 176 and 177, and was mapped as a USGS stream. It is dominated by reed canary grass and sedges. It will be temporarily impacted during installation of the underground cabling (Crossing 63).

Section 34, T113N, R49W (Figure 36)

Proposed activities would occur in tilled crop fields and planted CRP grassland. Wetland J6-1 is located in a grassy swale draining toward the south into a USGS-mapped stream. The seasonally-flooded wetland is dominated by cattails, woolgrass, and sedges. The current layout avoids impacts to this wetland.

Wetland J6-2 is a seasonally-flooded wetland fringe of a USGS stream. It has a defined bed and bank and is dominated by cattails and reed canary grass. No impacts are proposed to Wetland J6-2 in the current layout.

Bed and Bank Waterway and Wetland Crossing Summary

The proposed turbines have been sited to avoid impacts to bed and bank waterways and wetland areas. However, proposed access roads, aboveground transmission and underground cabling would involve crossing 63 wetland or bed and bank waterway features at 73 locations (Table 6 and Figures 6-36); some features are crossed in multiple locations.

Bed and Bank Waterway Crossings

The proposed turbines and access roads for the Buffalo Ridge II Wind Project would not cross waterways with defined bed and banks. The proposed aboveground and underground electrical collection systems for the Project would involve bed and bank stream crossings at 19 locations (12 underground crossings and 7 aboveground crossings) associated with 12 streams, some with crossings in multiple locations, as shown in Table 6 and Figures 6-36.

All of the waterway crossings are located in areas that would allow staging areas to be established in adjacent uplands, to avoid and minimize temporary impacts to the waterways or riparian areas adjacent to them.

Wetland Crossings

The current configuration would permanently impact two isolated non-jursidictional wet basins and one non-isolated jurisdicitional wet swale as a result of access road construction and placement. The remaining temporary wetland impacts would occur within wet basins or wet swales. Aboveground transmission lines would span the wetlands identified, potentially temporarily impacting these resources as a result of construction activities. Underground cabling likely would be trenched across the wetland areas, resulting in temporary impacts.

Table 6. Bed & Bank Waterway and Wetland Crossing Summary

Crossing Number	Figure Number	Location	Crossing Type	Approximate Crossing Area (square feet)[1]	Type of Impact	Proposed Activity
1	6	NE¼, Sec 25, T111N, R48W	Wet Swale	871sq ft	Permanent	Access Road Fill
				1,742 sq ft	Temporary	Access Road Fill
2	7	SW1/4, Sec 19 T111N, R47W	Wet Swale	1,336 sq ft	Temporary	Underground Electrical
				13,118 sq ft	Temporary	Aboveground Electrical
3	7	NW1/4, Sec 19, T111N, R47W	Wet Swale	160 sq ft	Temporary	Underground or Aboveground Electrical
4	8	SW1/4, Sec 18, T111N, R47W	Wet Swale	1,128 sq ft	Temporary	Underground Electrical
				9,965 sq ft	Temporary	Aboveground Electrical

[1] Impacts were calculated with the following assumptions: Permanent impacts for access roads are 16 feet wide, with 32 feet for temporary impacts. Temporary impacts for underground trenching are 8 feet wide per circuit. All wetlands within the 75-foot road right-of-way would be temporarily impacted during installation of the aboveground (a likely overestimation). Does not take into account any crossings that may be directional bored (i.e., if coordination with USFWS indicates that stream features are likely Topeka shiner habitat and avoidance of all temporary impacts are warranted).

Crossing Number	Figure Number	Location	Crossing Type	Approximate Crossing Area (square feet)[1]	Type of Impact	Proposed Activity
5a	8	NW1/4, Sec 18, T111N, R47W	Wet Swale	4,348 sq ft	Temporary	Aboveground Electrical
				480 sq ft	Temporary	Underground Electrical
5b	8	NW1/4, Sec 18, T111N, R47W	Wet Swale	6,747 sq ft	Temporary	Aboveground Electrical
				756 sq ft	Temporary	Underground Electrical
6	9	SE1/4, Sec 12, T111N, R48W	Wet Swale	4,951 sq ft	Temporary	Aboveground Electrical
				796 sq ft	Temporary	Underground Electrical
7	9	SE1/4, Sec 12, T111N, R48W	Wet Swale	750 sq ft	Temporary	Underground Electrical
				3,674 sq ft	Temporary	Aboveground Electrical
8	9	NE1/4, Sec 12, T111N, R48W	Wet Swale	289 sq ft	Temporary	Underground Electrical
				2,859 sq ft	Temporary	Aboveground Electrical
9	9	NE1/4, Sec 12, T111N, R48W	Wet Swale	369 sq ft	Temporary	Underground Electrical

Crossing Number	Figure Number	Location	Crossing Type	Approximate Crossing Area (square feet)[1]	Type of Impact	Proposed Activity
				3,472 sq ft	Temporary	Aboveground Electrical
10	9	NE1/4, Sec 12, T111N, R48W	Wet Swale	3,995 sq ft	Temporary	Aboveground Electrical
11	9	SW1/4, Sec 12, T111N, R48W	Isolated Wet Basin	165 sq ft	Permanent	Access Road Fill
				361 sq ft	Temporary	Access Road Fill
12	9	NW1/4, Sec 12, T111N, R48W	Wet Swale	2,945 sq ft	Temporary	Aboveground Electrical
13	11	SE1/4, Sec 2, T111N, R48W	Wet Swale	8,740 sq ft	Temporary	Aboveground Electrical
14	11	SW1/4, Sec 2, T111N, R48W	Wet Swale	282 sq ft	Temporary	Aboveground Electrical
15	11	NW1/4, Sec 3, T111N, R48W	Wet Swale	1,096 sq ft	Temporary	Underground Electrical
16	11	NW1/4, Sec3, T111N, R48W	Isolated Wet Basin	224 sq ft	Temporary	Underground Electrical
17	12	SE1/4, Sec 4, T111N, R48W	Isolated Wet Basin	856 sq ft	Temporary	Underground Electrical
18	14	SW1/4, Sec 35, T112N, R48W	Wet Swale	9,957 sq ft	Temporary	Aboveground Electrical
19	14	SW1/4, Sec 35, T112N, R48W	Wet Swale	6,716 sq ft	Temporary	Aboveground Electrical
20	14	NW1/4, Sec 35, T112N, R48W	Wet Swale	2,364 sq ft	Temporary	Aboveground Electrical
21	14	NW1/4, Sec 34, T112N, R48W	Bed and Bank, Unnamed Creek	256 sq ft	Temporary	Underground Electrical

Crossing Number	Figure Number	Location	Crossing Type	Approximate Crossing Area (square feet)[1]	Type of Impact	Proposed Activity
22	14	NW1/4, Sec 34, T112N, R48W	Wet Swale	4,184 sq ft	Temporary	Aboveground Electrical
23a	15	SE1/4, Sec 33, T112N, R48W	Wet Swale	562 sq ft	Temporary	Underground Electrical
23b	15	SE1/4, Sec 33, T112N, R48W	Wet Swale	592 sq ft	Temporary	Underground Electrical
24a	15	E1/2, Sec 33, T112N, R48W	Bed and Bank, Unnamed Creek	1,152 sq ft	Temporary	Underground Electrical
24b	15	E1/2, Sec 33, T112N, R48W	Bed and Bank, Unnamed Creek	656 sq ft	Temporary	Underground Electrical
24c	15	E1/2, Sec 33, T112N, R48W	Bed and Bank, Unnamed Creek	304 sq ft	Temporary	Underground Electrical
24d	15	E1/2, Sec 33, T112N, R48W	Bed and Bank, Unnamed Creek	240 sq ft	Temporary	Underground Electrical
25	14	NW1/4, Sec 34, T112N, R48W	Wet Swale	982 sq ft	Temporary	Aboveground Electrical
26	16	NW1/4, Sec 27, T112N, R48W	Isolated Wet Swale	4,740 sq ft	Temporary	Aboveground Electrical
27	16	SW1/4, Sec 27, T112N, R48W	Bed and Bank, Unnamed Creek	313 sq ft	Temporary	Underground Electrical
28	18	NE1/4, Sec 25, T112N, R49W	Wet Swale	336 sq ft	Temporary	Underground Electrical
29	19	NE1/4, Sec 22, T112N, R48W	Isolated Wet Basin	177 sq ft	Permanent	Access Road Fill
				651 sq ft	Temporary	Access Road Fill
30	20	SE1/4, Sec 21, T112N, R48W	Bed and Bank, Unnamed Creek	824 sq ft	Temporary	Underground Electrical
31	20	SW1/4, Sec 21, T112N, R48W	Wet Swale	7,876 sq ft	Temporary	Aboveground Electrical

Crossing Number	Figure Number	Location	Crossing Type	Approximate Crossing Area (square feet)[1]	Type of Impact	Proposed Activity
32	20	SE1/4, Sec 20, T112N, R48W	Wet Swale	760 sq ft	Temporary	Underground Electrical
33a	20	SW1/4, Sec 20, T112N, R48W	Bed and Bank, Unnamed Creek	4,271 sq ft	Temporary	Aboveground Electrical
33b	20	SW1/4, Sec 20, T112N, R48W	Bed and Bank, Unnamed Creek	8,622 sq ft	Temporary	Aboveground Electrical
33c	20	SW1/4, Sec 20, T112N, R48W	Bed and Bank, Unnamed Creek	6,379 sq ft	Temporary	Aboveground Electrical
33d	20	SW1/4, Sec 20, T112N, R48W	Bed and Bank, Unnamed Creek	10,050 sq ft	Temporary	Aboveground Electrical
33e	20	SW1/4, Sec 20, T112N, R48W	Bed and Bank, Unnamed Creek	35,929 sq ft	Temporary	Aboveground Electrical
34	21	SE1/4, Sec 19, T112N, R48W	Bed and Bank, Unnamed Creek	2,185 sq ft	Temporary	Aboveground Electrical
35	21	SE1/4, Sec 19, T112N, R48W	Wet Swale	1,360 sq ft	Temporary	Underground Electrical
36	21	E1/2, Sec 19, T112N, R48W	Bed and Bank, Unnamed Creek	389 sq ft	Temporary	Underground Electrical
37	21	NE1/4, Sec 19, T112N, R48W	Wet Swale	5,175 sq ft	Temporary	Aboveground Electrical
38	24	SW1/4, Sec 18, T112N, R48W	Wet Swale	9,064 sq ft	Temporary	Aboveground Electrical
39	21	E1/2, Sec 24, T112N, R49W	Wet Swale	960 sq ft	Temporary	Underground Electrical
40	21	SW1/4, Sec 24, T112N, R49W	Isolated Wet Swale	1,096 sq ft	Temporary	Underground Electrical
41	24	SE1/4, Sec 18, T112N, R48W	Isolated Wet Swale	520 sq ft	Temporary	Underground Electrical
42	24	SE1/4, Sec 18, T112N, R48W	Bed and Bank, Unnamed Creek	8,391sq ft	Temporary	Aboveground Electrical

Crossing Number	Figure Number	Location	Crossing Type	Approximate Crossing Area (square feet)[1]	Type of Impact	Proposed Activity
43	24	SW1/4, Sec 18, T112N, R48W	Wet Swale	856 sq ft	Temporary	Underground Electrical
44	24	SW1/4, Sec 18, T112N, R48W	Wet Swale	2,087 sq ft	Temporary	Aboveground Electrical
45	24	NE1/4, Sec 13, T112N, R49W	Wet Swale	864 sq ft	Temporary	Underground Electrical
46	25	NE1/4, Sec 9, T112N, R48N	Wet Swale	712 sq ft	Temporary	Underground Electrical
47	26	NW1/4, Sec 8, T112N, R48W	Wet Swale	208 sq ft	Temporary	Underground Electrical
48	26	NW1/4, Sec 7, T112N, R48W	Bed and Bank, Sixmile Creek	184 sq ft	Temporary	Underground Electrical
49	26	SW1/4, Sec 7, T112N, R48W	Wet Swale	3,783 sq ft	Temporary	Aboveground Electrical
50	26	SW1/4, Sec 7, T112N, R48W	Wet Swale	4,731 sq ft	Temporary	Aboveground Electrical
51	26	NW1/4, Sec 7, T112N, R48W	Isolated Wet Basin	4,394 sq ft	Temporary	Aboveground Electrical
52a	27	NW1/4, Sec 12, T112N, R48W	Wet Swale	384 sq ft	Temporary	Underground Electrical
52b	27	NW1/4, Sec 12, T112N, R48W	Wet Swale	846 sq ft	Temporary	Underground Electrical
53	29	SW1/4, Sec 3, T112N, R48W	Isolated Wet Basin	328 sq ft	Temporary	Underground Electrical
54	29	SW1/4, Sec 3, T112N, R48W	Bed and Bank, Unnamed Creek	448 sq ft	Temporary	Underground Electrical
55	29	NE1/4, Sec 4, T112N, R48W	Wet Swale	1,648 sq ft	Temporary	Underground Electrical
56	29	NW1/4, Sec 4, T112N, R48W	Wet Swale	838 sq ft	Temporary	Underground Electrical

Crossing Number	Figure Number	Location	Crossing Type	Approximate Crossing Area (square feet)[1]	Type of Impact	Proposed Activity
57	30	SW1/4, Sec 6, T112N, R48W	Isolated Wet Basin	6,981 sq ft	Temporary	Aboveground Electrical
58	30	NW1/4, Sec 6, T112N, R48W	Bed and Bank, Sixmile Creek	248 sq ft	Temporary	Underground Electrical
59	31	NE1/4, Sec 2, T112N, R48W	Wet Swale	296 sq ft	Temporary	Underground Electrical
60	34	SE 1/4, Sec 33, T113N, R48W	Bed and Bank, Unnamed Creek	668 sq ft	Temporary	Underground Electrical
61	35	SW 1/4, Sec 31, T113N, R48W	Wet Swale	286 sq ft	Temporary	Underground Electrical
62	35	SE 1/4, Sec 36, T113N, R49W	Wet Swale	2,954 sq ft	Temporary	Underground Electrical
63	36	NE 1/4, Sec 35, T113N, R49W	Wet Swale	649 sq ft	Temporary	Underground Electrical

6.0 CONCLUSIONS

Buffalo Ridge II would avoid wetland impacts to the extent practicable. Based on the wetland delineation, Buffalo Ridge II is avoiding placing turbines in wetlands within the Project site. Under the current layout, the proposed underground collection system and aboveground 34.5 kV and 115 kV lines would cross "defined-bed and bank" waterways at 19 separate locations associated with 12 streams, some with multiple crossings. All the waterways at all 19 crossing points appear to be jurisdictional under USACE rules. These locations would be spanned, trenched, or bored to avoid and minimize temporary stream disturbance and prevent fill from being permanently placed in the waterway.

Under the current layout the access roads avoid wetlands, with three exceptions: the proposed access road between 484th Avenue and the BRII-South Substation, the proposed access road for Turbine 1, and the proposed access road to Turbine 76. Two of the proposed permanent impacts would occur in isolated non-jursidictional wet basins, and one (the access road to the BRII-South Substation) would occur in a non-isolated wet swale. Temporary impacts to wetlands and bed and bank streams could occur from trenching or boring in the underground collection system or construction of the aboveground transmission lines and access roads in 73 locations.

There are proposed wind farm facilities on one USFWS wetland easement in the Project boundary, in Section 33, T112N, R48W. The wetland delineations indicate that the current layout avoids all impacts to wetlands within this easement. However, coordination with the USFWS should occur prior to any construction within this easement.

In South Dakota, jurisdictional wetlands and waters are regulated by the U.S. Army Corps of Engineers (USACE) through Section 404 of the Clean Water Act. Temporary and permanent impacts to waters of the U.S., due to the placement of the electrical system or access roads, are considered separately per the March 2007 re-issuance of the nationwide permit (NWP) 12 and NWP 14 definition of a single and complete project. Utility line activities (including access roads) through waters of the U.S. are authorized under NWP 12, and linear access roads are authorized under NWP 14, provided there is no change to pre-construction contours, and the activity does not result in the loss of greater than ½ acre of waters of the U.S. Based on the current layout and the description of crossings received from IBR, the proposed permanent and temporary wetland impacts resulting from construction of the access roads and underground collection system are expected to meet the general and regional conditions of NWP 12 and NWP 14 and not require pre-construction notification of the USACE. Nineteen of the temporary impacts associated with installation of the aboveground electrical line across jurisdictional wetlands have the potential to be greater than 0.1 acres, which would require pre-construction notice. However, the temporary impact calculations for aboveground electrical installation presented in Table 6 use the "worst-case" assumption that the entire length of the electrical line right of way will be disturbed for a width of 75 feet. HDR

recommends that final plan and profile engineering for the aboveground route and construction planning examine these locations to more accurately estimate the amount of temporary impacts necessary. Construction activities in wetlands should be limited as much as possible during construction, and practices such as minimizing construction vehicle traffic through wetlands, assembling the aboveground structures in adjacent uplands, etc., are expected to result in temporary impacts much less than the worst case calculations. If temporary impacts of 0.1 acres or greater to a single non-isolated wetland still cannot be avoided, the USACE district will need to be notified.

Finally, it should be noted that General Condition 17 of the NWP does require that if any species listed under the Endangered Species Act is known to be in the vicinity of the Project and/or may be affected by the proposed construction activity, that the Applicant notify the USACE prior to any work that may affect the listed species. Because the Project is located within watersheds containing documented occurrences of the federally endangered Topeka shiner, coordination with the USFWS and USACE should occur as the layout is being finalized in order to confirm which streams should be considered to provide Topeka shiner habitat, and determine what, if any, avoidance and minimization methods are appropriate.

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7.0 REFERENCES

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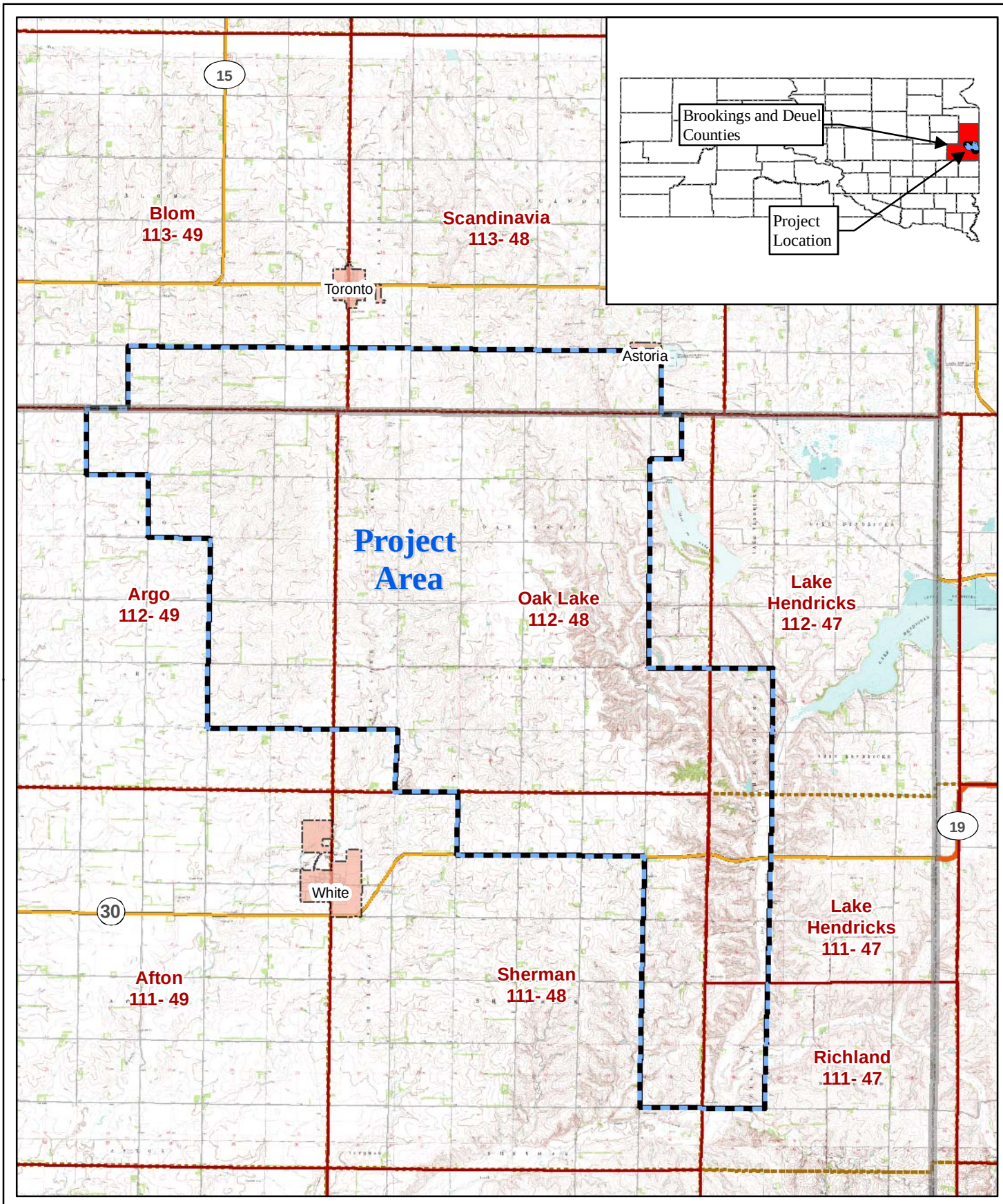
Figures



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IBERDROLA RENEWABLES

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0 0.5 1 2 3 Miles

- Site Boundary
- Municipalities
- Political Township Boundary
- PLSS Township Boundary
- County Boundary

Figure 1 - Project Location Map
Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

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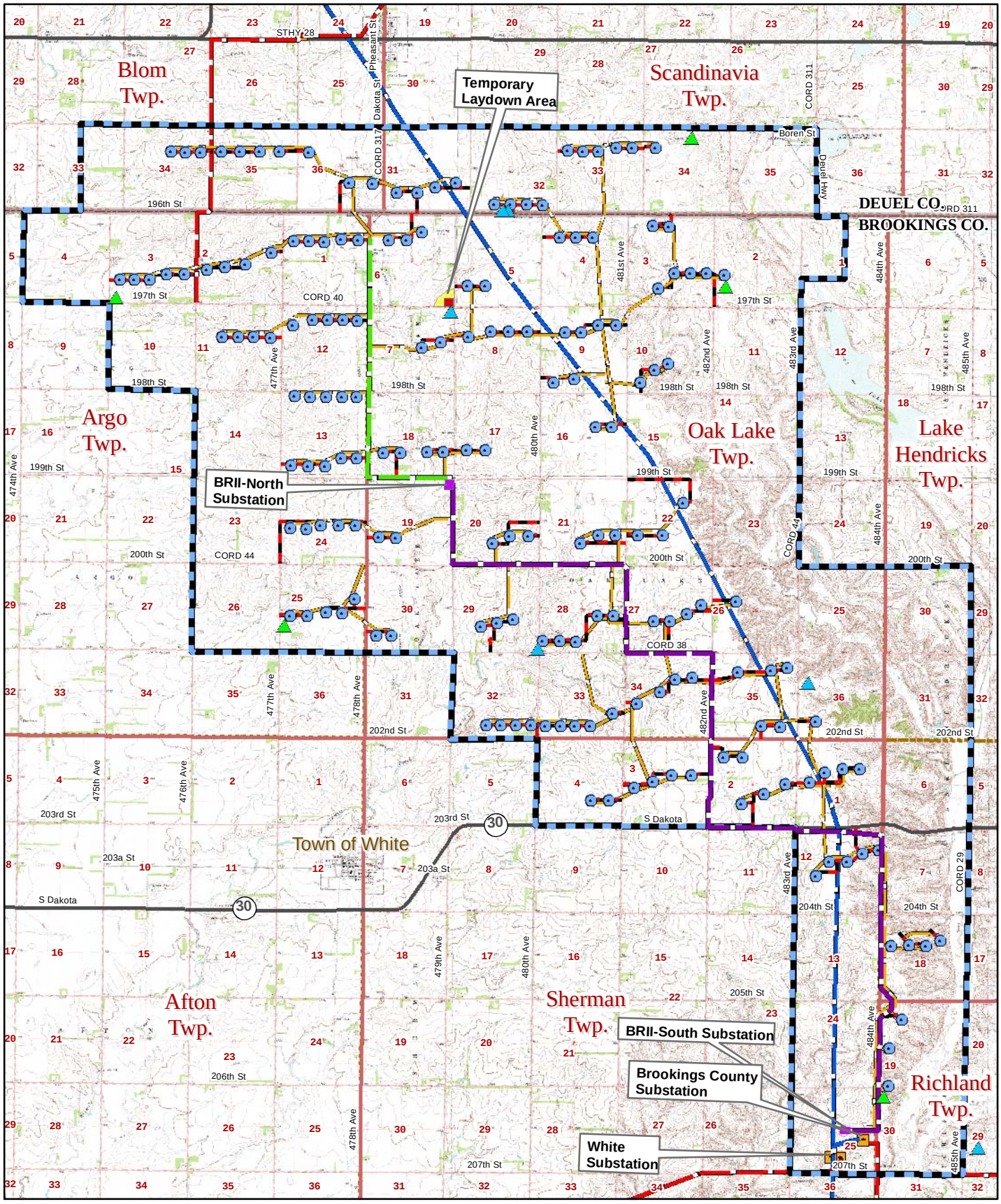
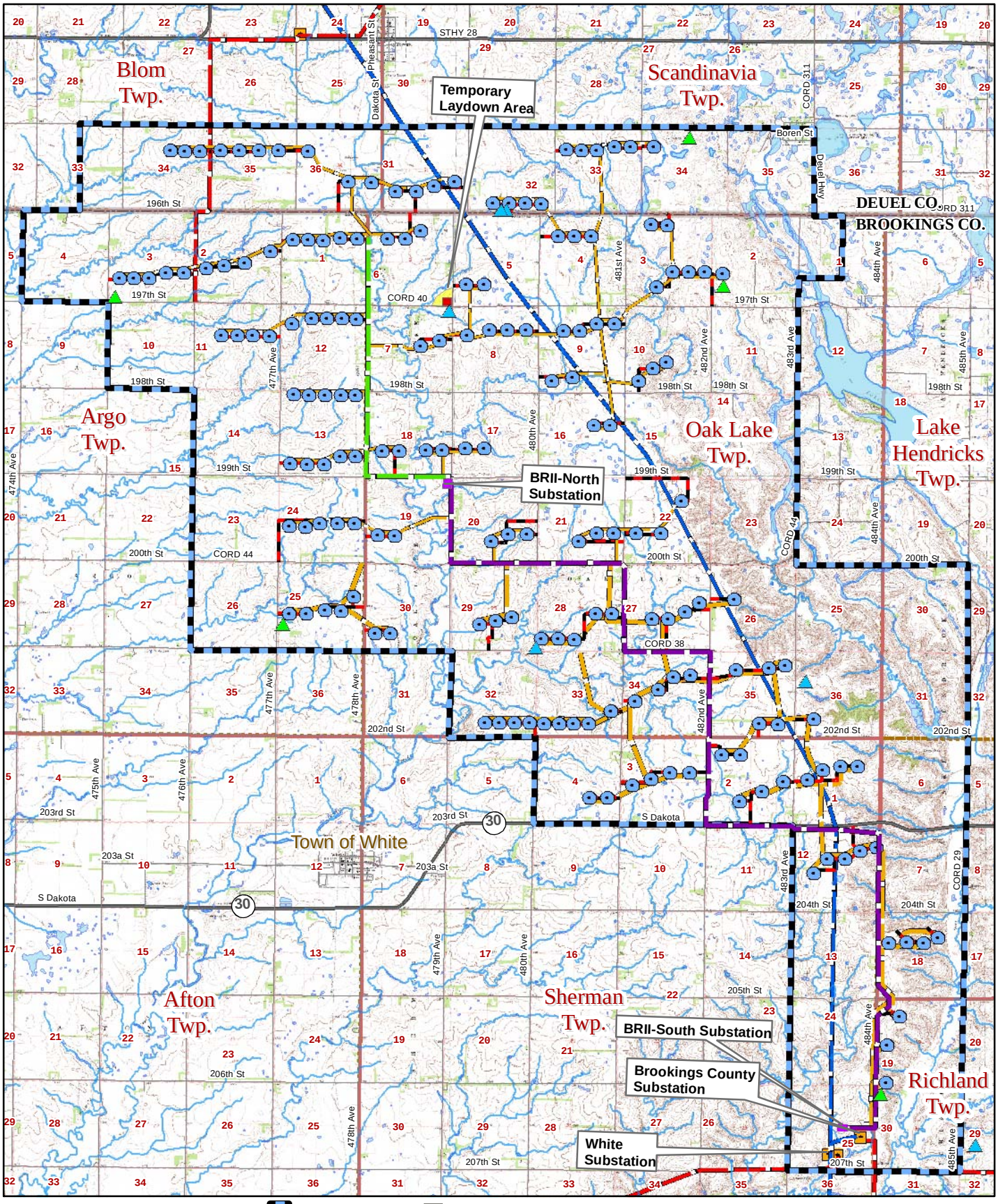


Figure 2 - Project Location and Layout
Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD



Site Boundary
Turbines
Temporary Met Towers
Permanent Met Towers
O&M Facility
Project Substation
Access Road
Underground Cabling

Temporary Laydown Area
Proposed Overhead Transmission Line
115 kV
34.5 kV
Existing Transmission Line
115 kV
345 kV
NWI Wetlands
USGS Streams

HDR
IBERDROLA RENEWABLES

N

Miles
0 0.5 1 2

Figure 3 - National Wetland Inventory
Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

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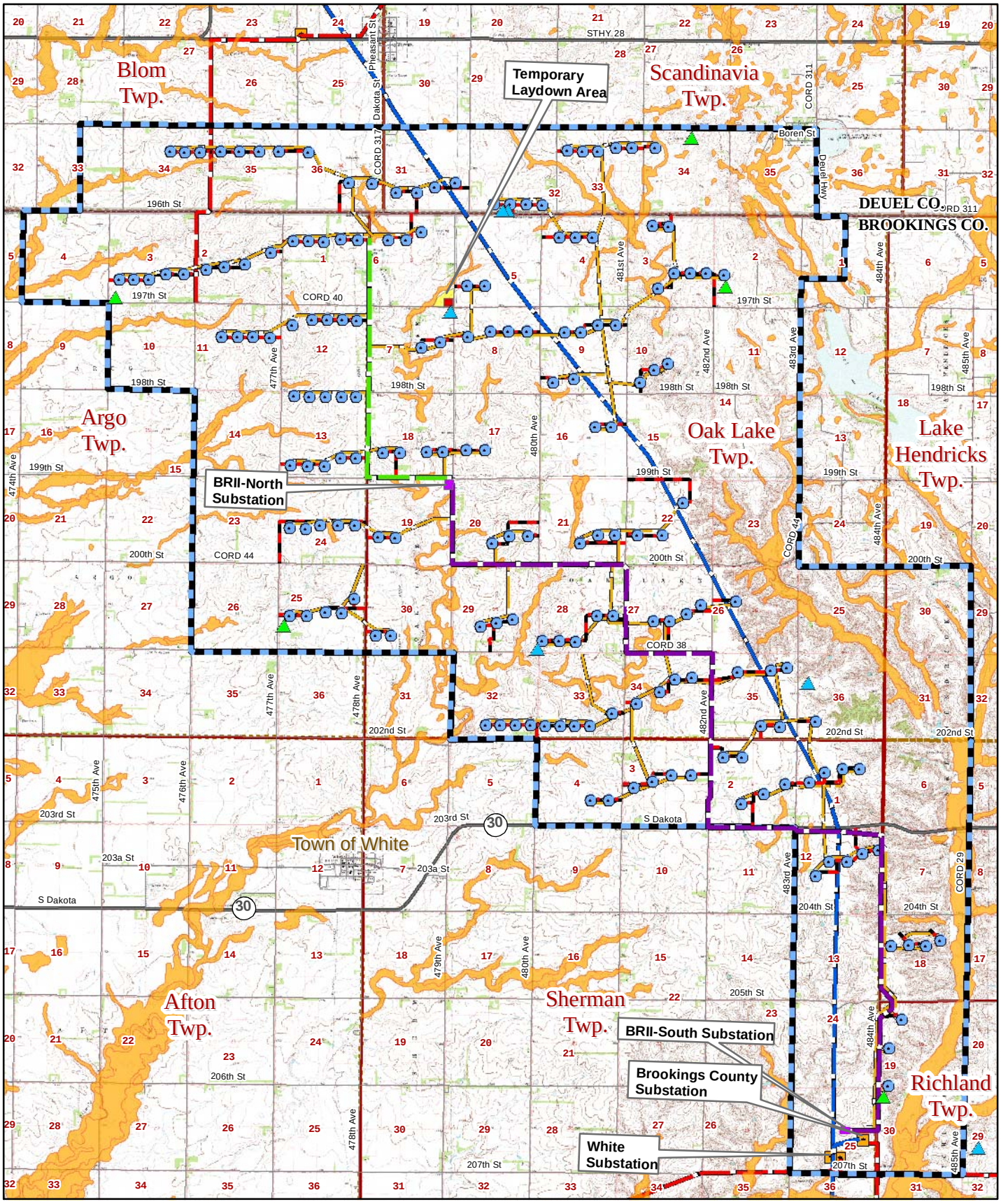

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IBERDROLA RENEWABLES

Miles
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- Site Boundary
- Turbines
- Temporary Met Towers
- Permanent Met Towers
- O&M Facility
- Project Substation
- Access Road
- Underground Cabling
- Temporary Laydown Area
- Proposed Overhead Transmission Line
  - 115 kV
  - 34.5 kV
- Existing Transmission Line
  - 115 kV
  - 345 kV
- Hydric Soils

Figure 4 - Hydric Soils Data
Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

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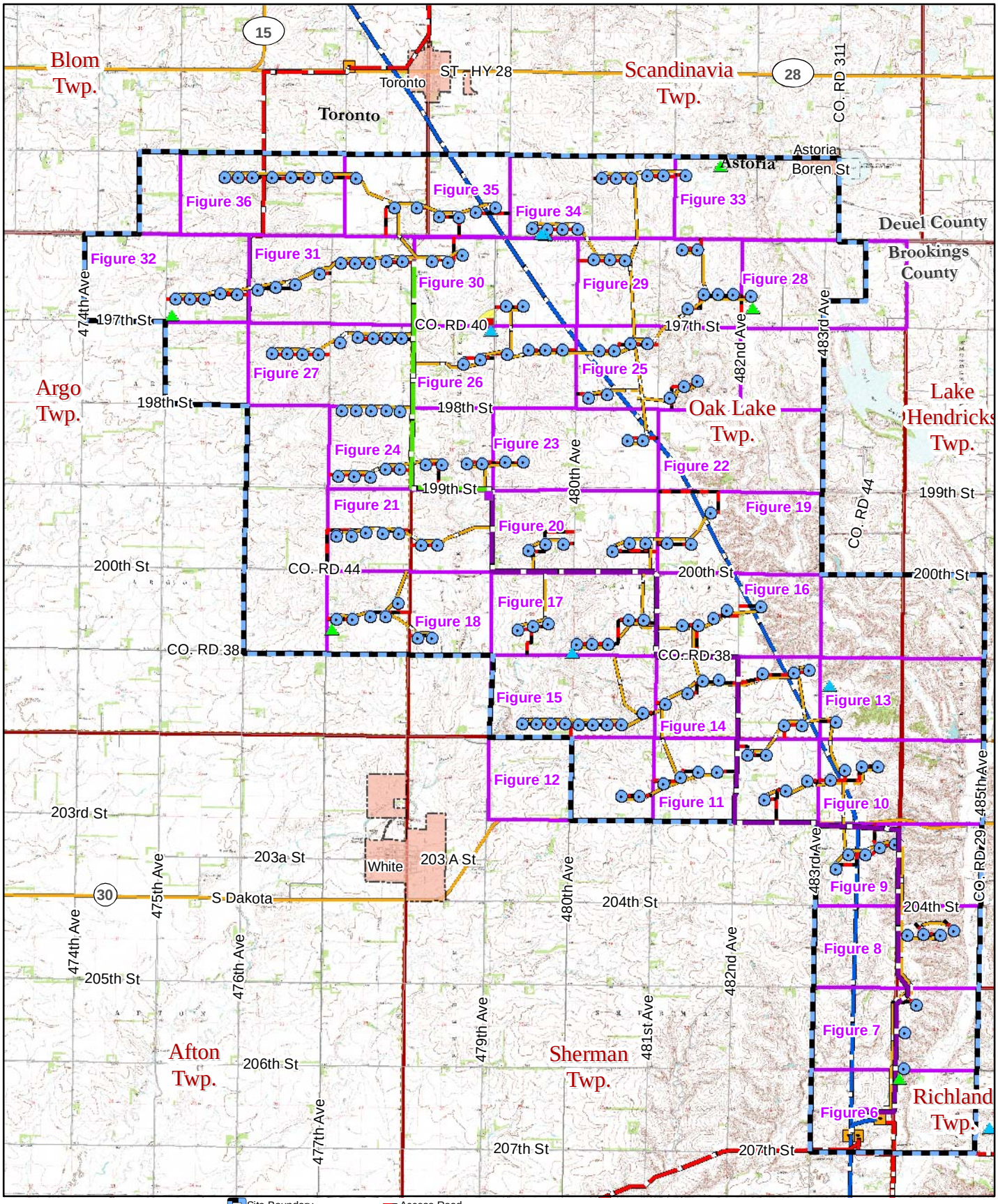

Site Boundary
Turbines
Temporary Met Towers
Permanent Met Towers
O&M Facility
Project Substation
Temporary Laydown Area
Substation
Underground Cabling
Access Road
Index
Proposed Overhead Transmission Line
115 kV
34.5 kV
Existing Transmission Line
115 kV
345 kV
Political Township Boundary
PLSS Township Boundary

IBERDROLA RENEWABLES

0 0.5 1 2 Miles

Figure 5 - Key Sheet for Detailed Section Figures
Wetland Delineation Report
Buffalo Ridge II Wind Farm
Iberdrola Renewables
Brookings and Deuel Counties, SD

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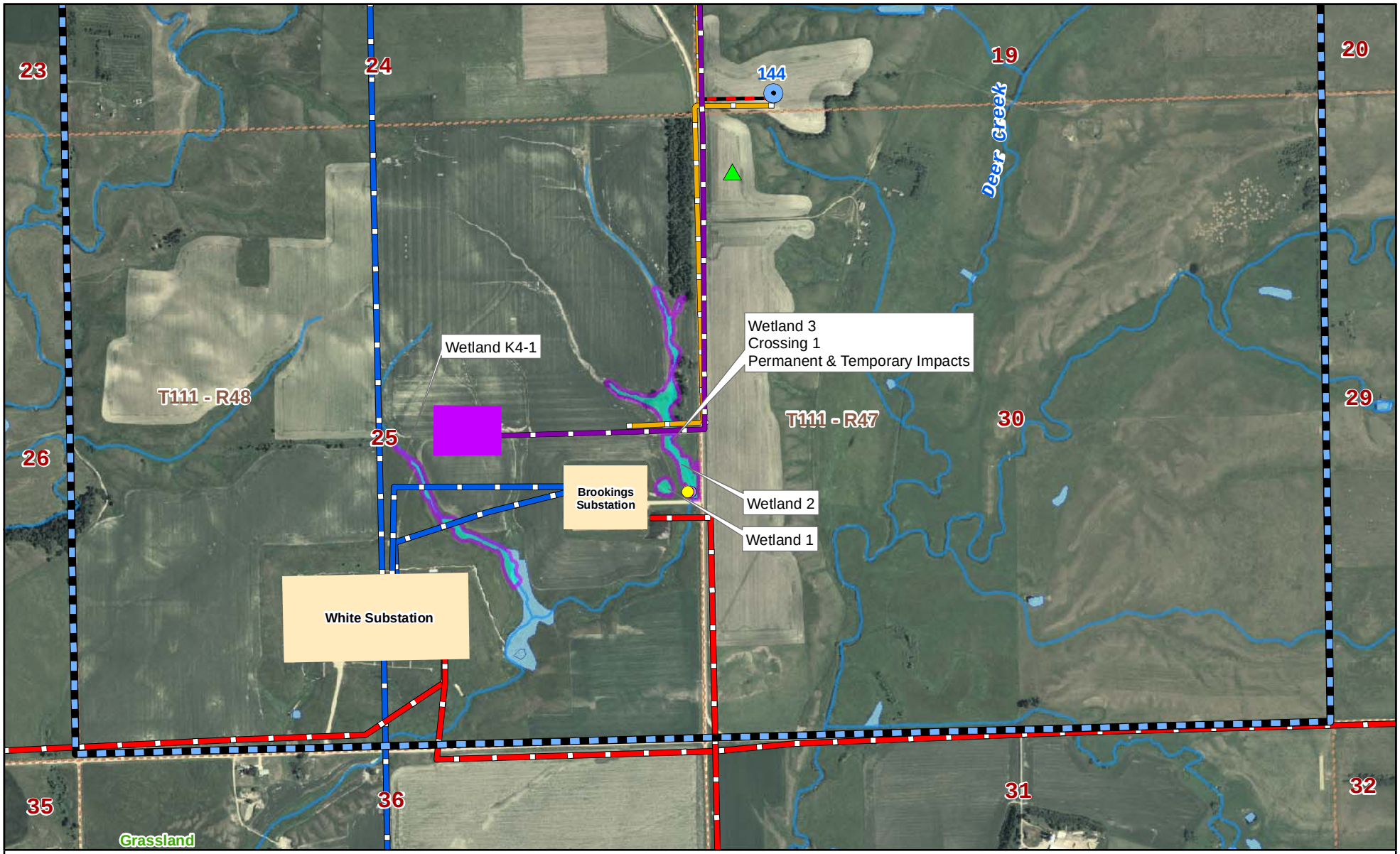

Site Boundary
Turbines
Access Road
Underground Cabling
Permanent Met Towers
Temporary Met Towers
Project Substation

Proposed Overhead Transmission Line
115 kV
34.5 kV
Existing Transmission Line
115 kV
345 kV
O&M Facility
Temporary Laydown Area

Wetland Data Points
Upland Data Points
Delineated Wetlands
NWI Wetlands
USGS Streams
USFWS Wetland Easement

*Note : * - Denotes Multiple Crossings*

HDR

IBERDROLA RENEWABLES

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Figure 6

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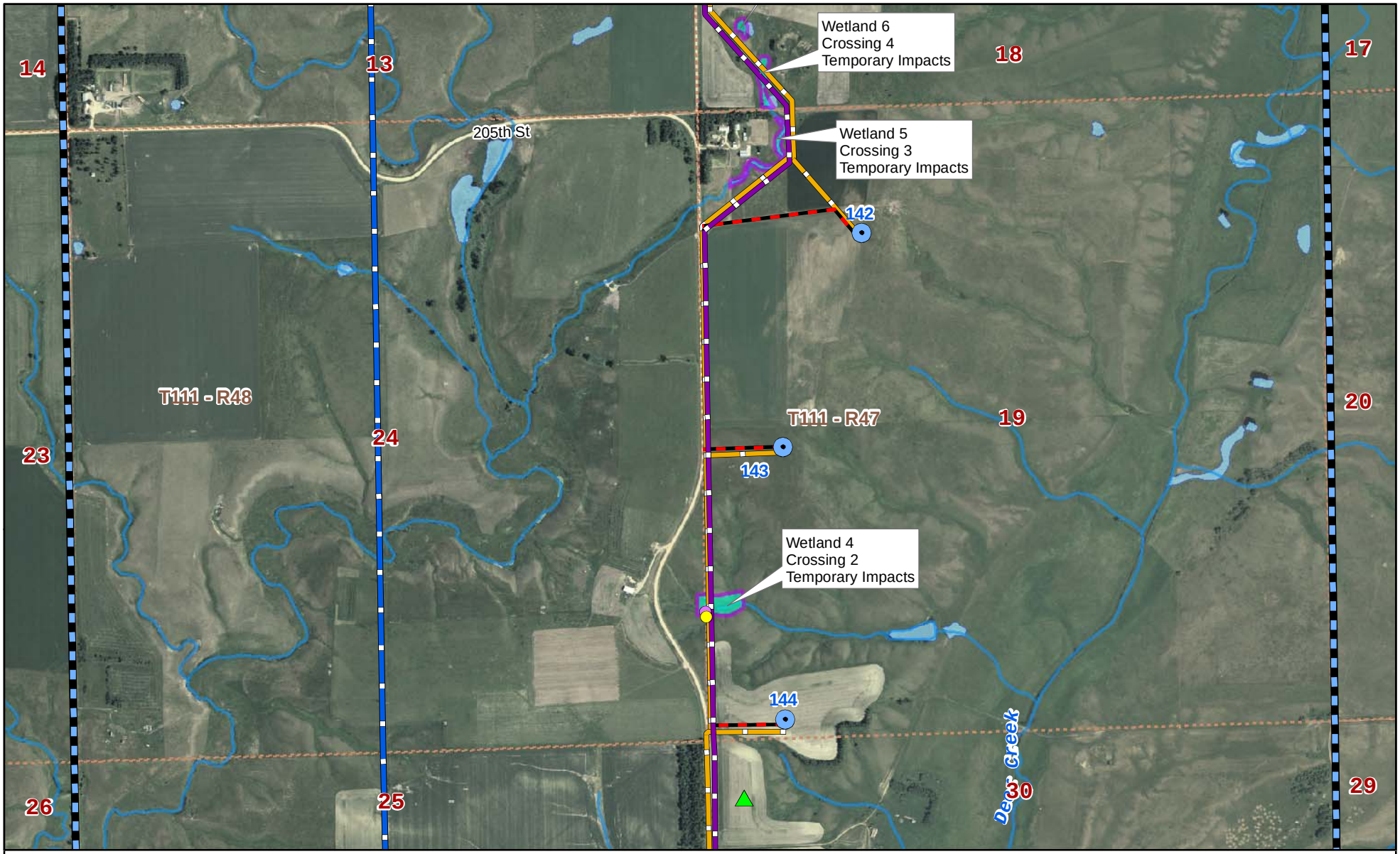
Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD



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Site Boundary
Turbines
Access Road
Underground Cabling
Permanent Met Towers
Temporary Met Towers
Project Substation

Proposed Overhead Transmission Line
115 kV
34.5 kV
Existing Transmission Line
115 kV
345 kV
O&M Facility
Temporary Laydown Area

Wetland Data Points
Upland Data Points
Delineated Wetlands
NWI Wetlands
USGS Streams
USFWS Wetland Easement

*Note : * - Denotes Multiple Crossings*

Figure 7

November 2009

Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

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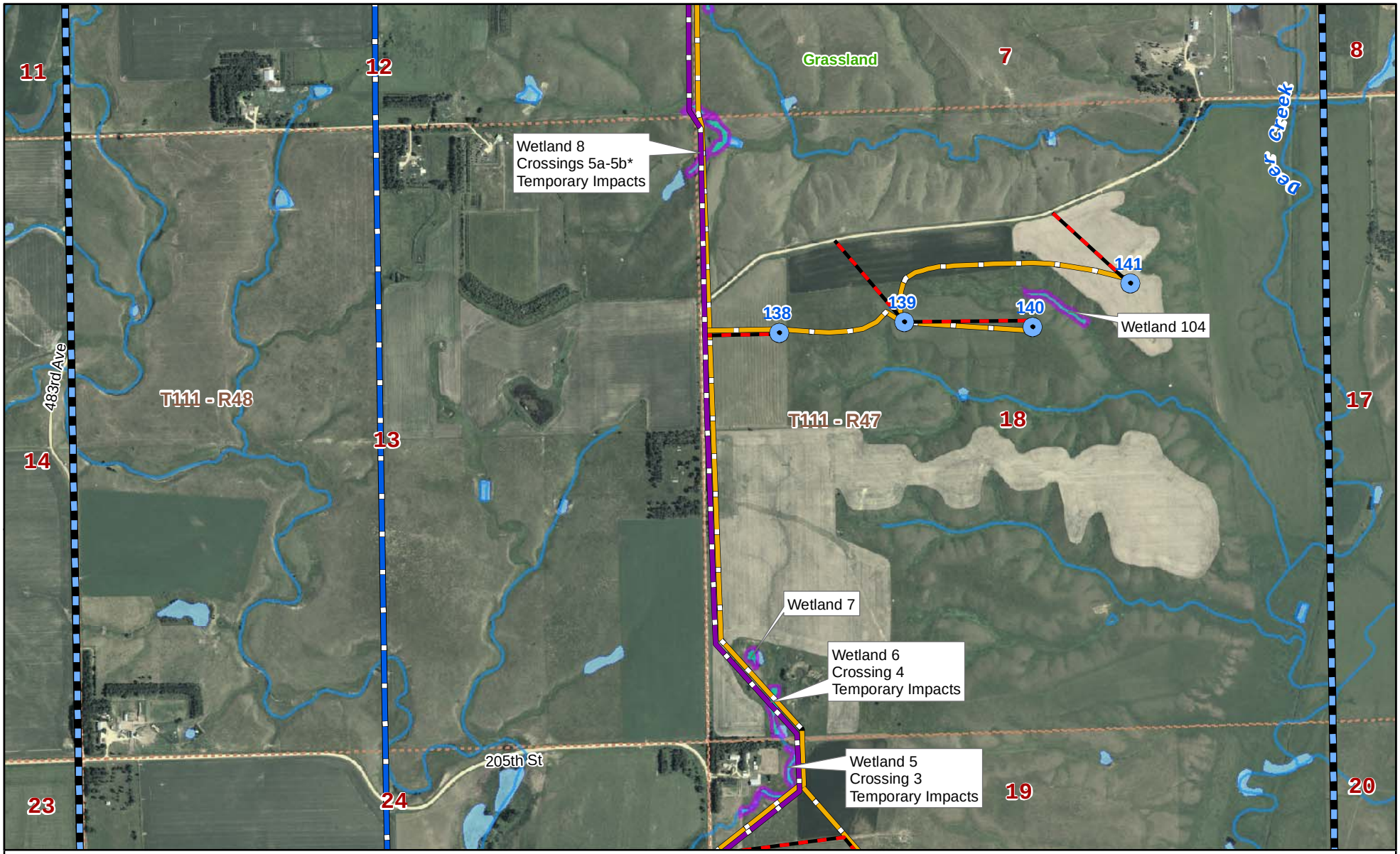

Site Boundary
Turbines
Access Road
Underground Cabling
Permanent Met Towers
Temporary Met Towers
Project Substation

Proposed Overhead Transmission Line
115 kV
34.5 kV
Existing Transmission Line
115 kV
345 kV
O&M Facility
Temporary Laydown Area

Wetland Data Points
Upland Data Points
Delineated Wetlands
NWI Wetlands
USGS Streams
USFWS Wetland Easement

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IBERDROLA RENEWABLES

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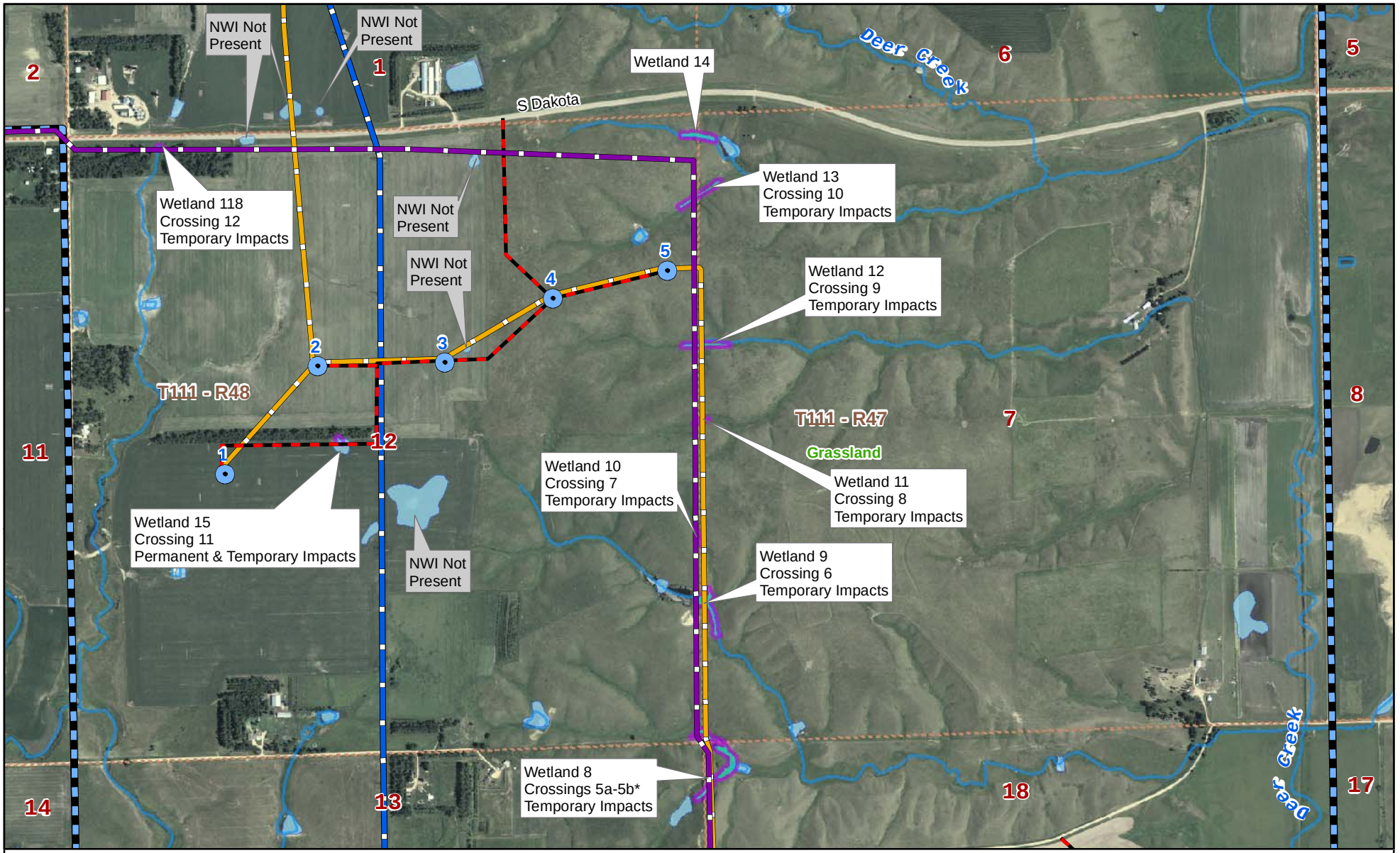
Figure 8

November 2009

Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD



Site Boundary
Turbines
Access Road
Underground Cabling
Permanent Met Towers
Temporary Met Towers
Project Substation

Proposed Overhead Transmission Line
115 kV
34.5 kV

Existing Transmission Line
115 kV
345 kV
O&M Facility
Temporary Laydown Area

Wetland Data Points
Upland Data Points
Delineated Wetlands
NWI Wetlands
USGS Streams
USFWS Wetland Easement

*Note : * - Denotes Multiple Crossings*

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Figure 9

November 2009

Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

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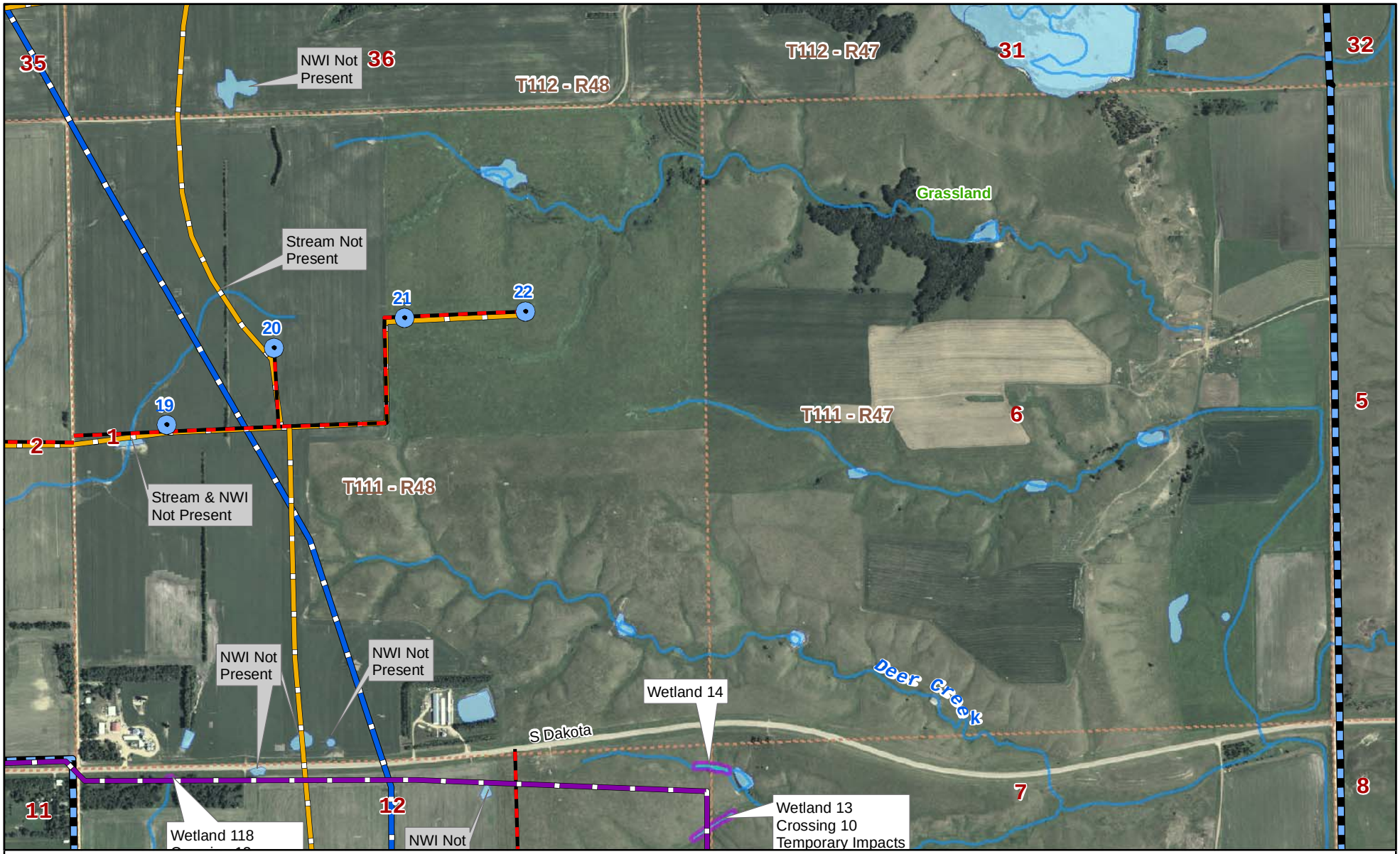

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Site Boundary
Turbines
Access Road
Underground Cabling
Permanent Met Towers
Temporary Met Towers
Project Substation

Proposed Overhead Transmission Line
115 kV
34.5 kV
Existing Transmission Line
115 kV
345 kV
O&M Facility
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Wetland Data Points
Upland Data Points
Delineated Wetlands
NWI Wetlands
USGS Streams
USFWS Wetland Easement

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Figure 10

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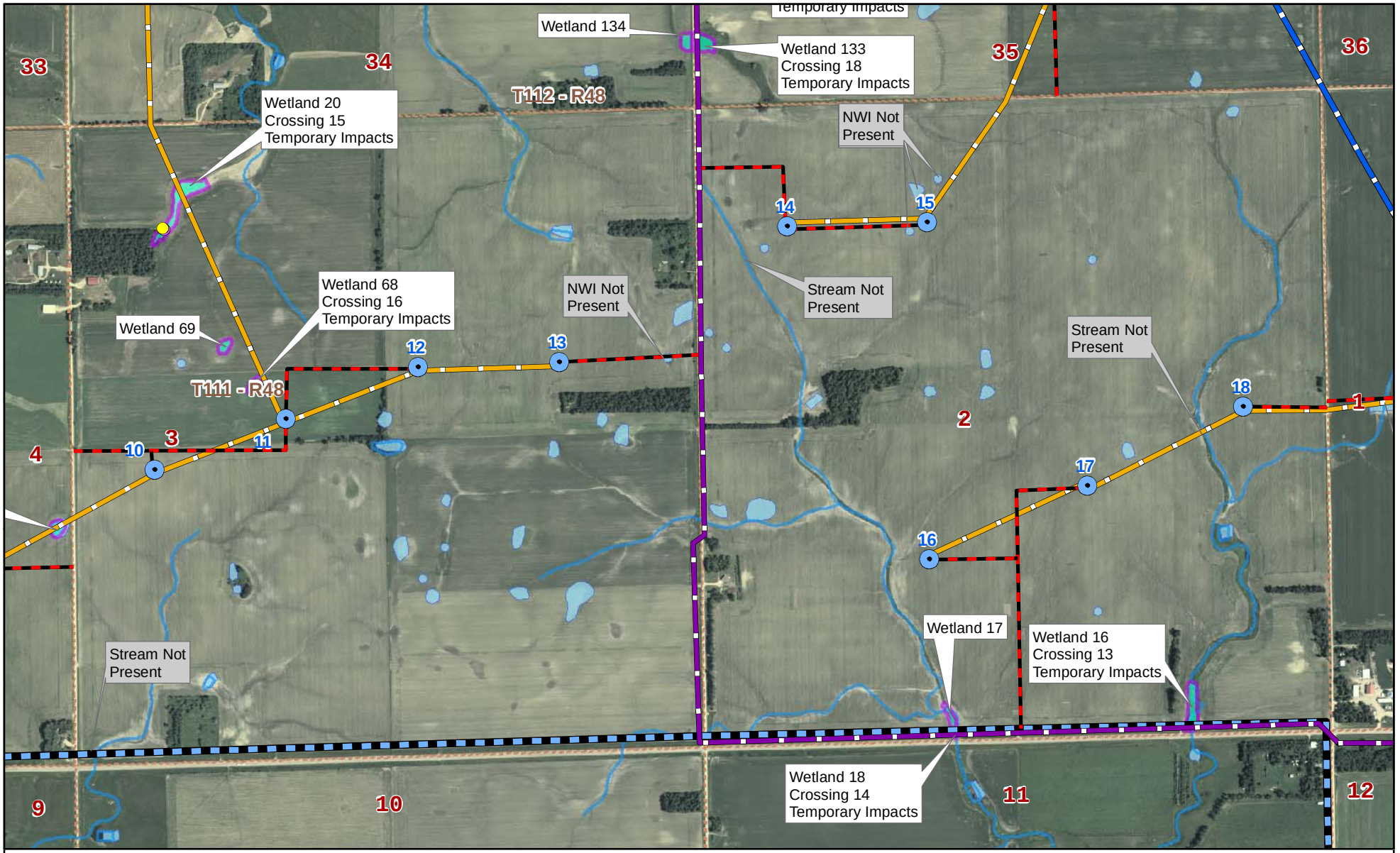
Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD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14
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Stream Not
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Crossing 16
Temporary Impacts
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Stream Not
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115 kV
345 kV
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Temporary Laydown Area
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Upland Data Points
Delineated Wetlands
NWI Wetlands
USGS Streams
USFWS Wetland Easement
Note : * - Denotes Multiple Crossings
Figure 11
November 2009
Wetland Delineation Report
Buffalo Ridge II Wind Project
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Brookings and Deuel Counties, SD
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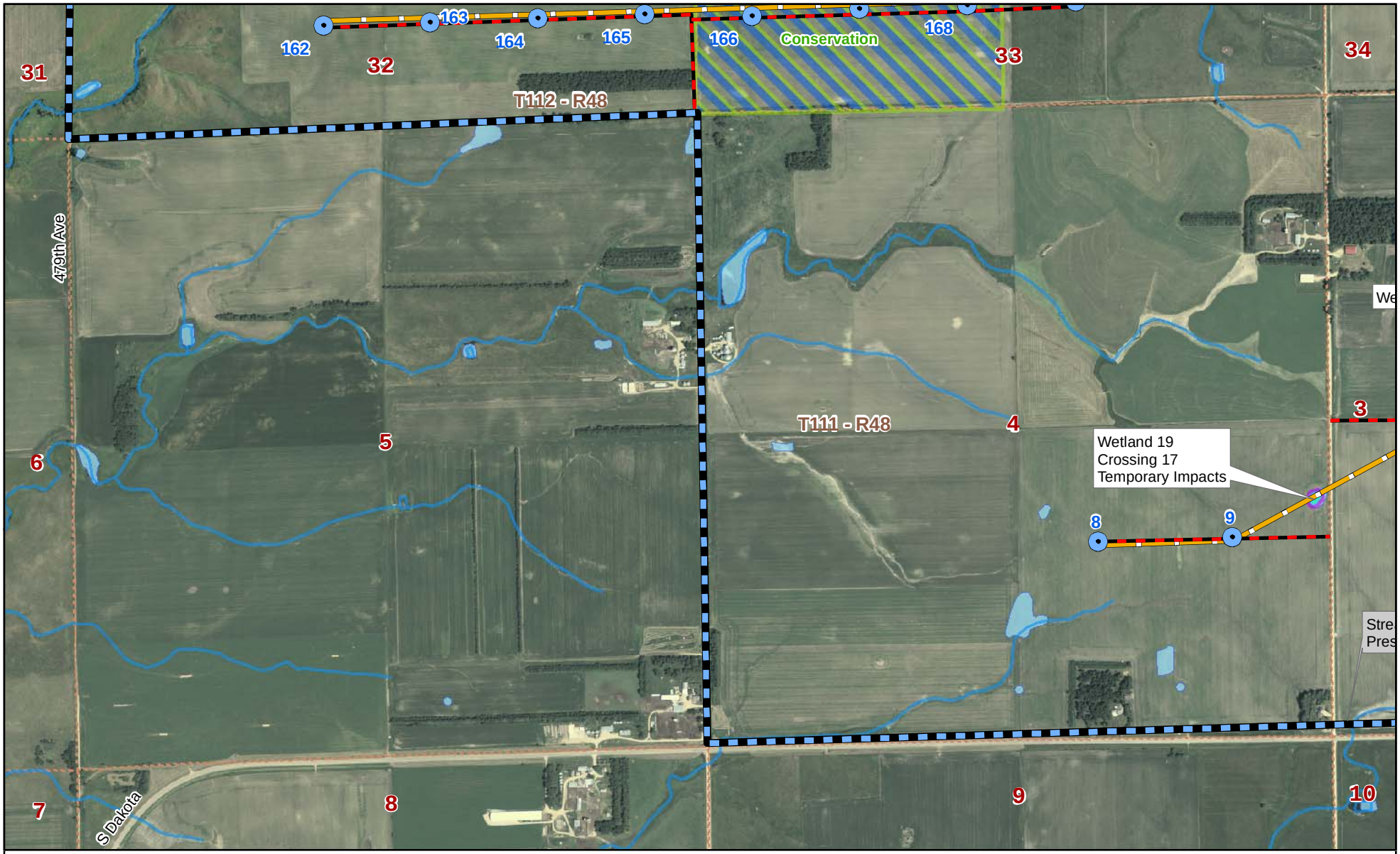

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IBERDROLA RENEWABLES

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- Site Boundary
- Turbines
- Access Road
- Underground Cabling
- Permanent Met Towers
- Temporary Met Towers
- Project Substation

Proposed Overhead Transmission Line
- 115 kV
- 34.5 kV

Existing Transmission Line
- 115 kV
- 345 kV
- O&M Facility
- Temporary Laydown Area

- Wetland Data Points
- Upland Data Points
- Delineated Wetlands
- NWI Wetlands
- USGS Streams
- USFWS Wetland Easement

*Note : * - Denotes Multiple Crossings*

Figure 12

November 2009

Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

Map Document: (Z:\PPM\79112\map_docs\mxd\Wetland_Delineation\BRII_WetlandDel_Mapbook_Dec_Final_copy.mxd)
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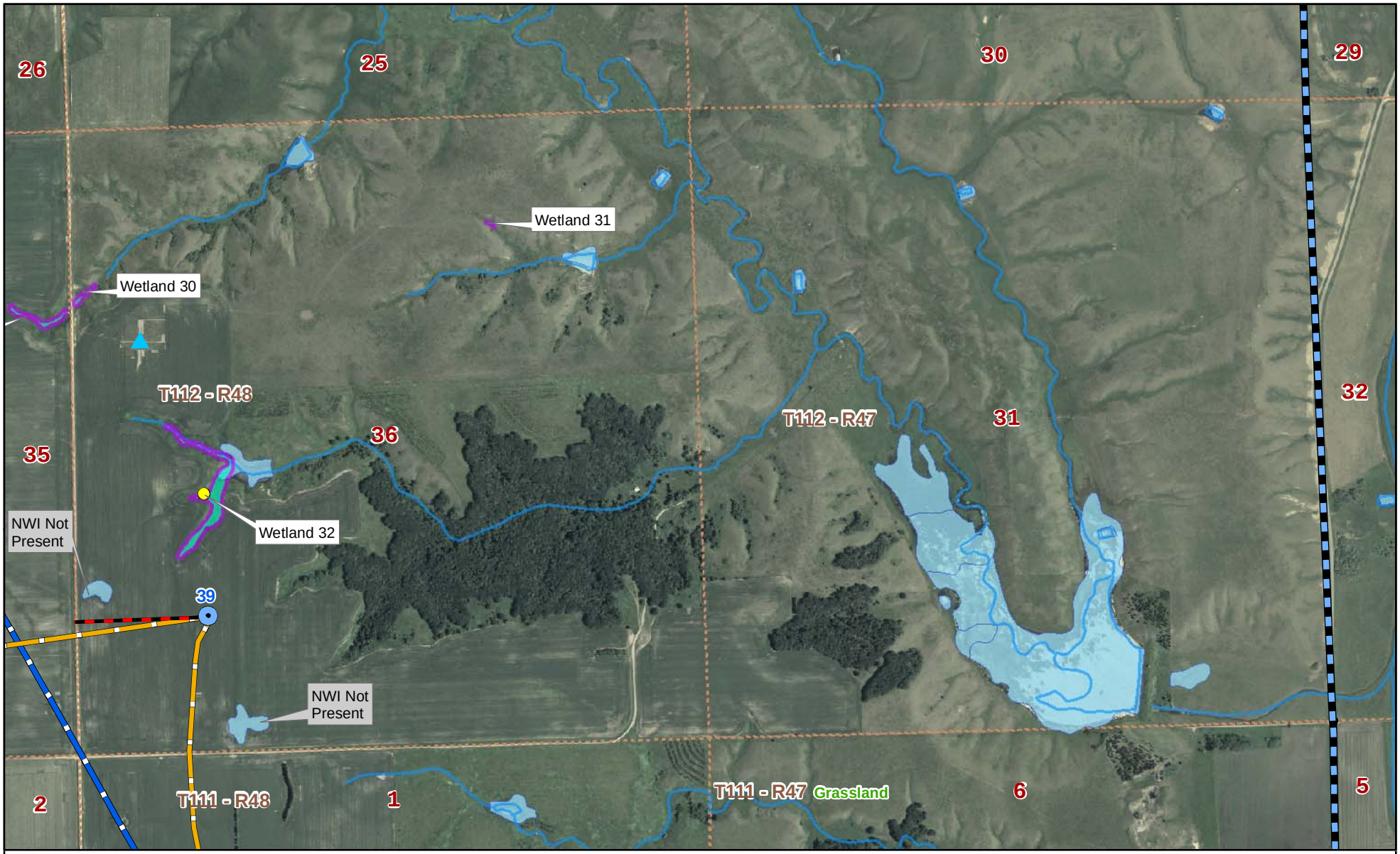

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IBERDROLA RENEWABLES

0 250 500 1,000 Feet

Site Boundary
Turbines
Access Road
Underground Cabling
Permanent Met Towers
Temporary Met Towers
Project Substation

Proposed Overhead Transmission Line
115 kV
34.5 kV
Existing Transmission Line
115 kV
345 kV
O&M Facility
Temporary Laydown Area

Wetland Data Points
Upland Data Points
Delineated Wetlands
NWI Wetlands
USGS Streams
USFWS Wetland Easement

*Note : * - Denotes Multiple Crossings*

Figure 13

November 2009

Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

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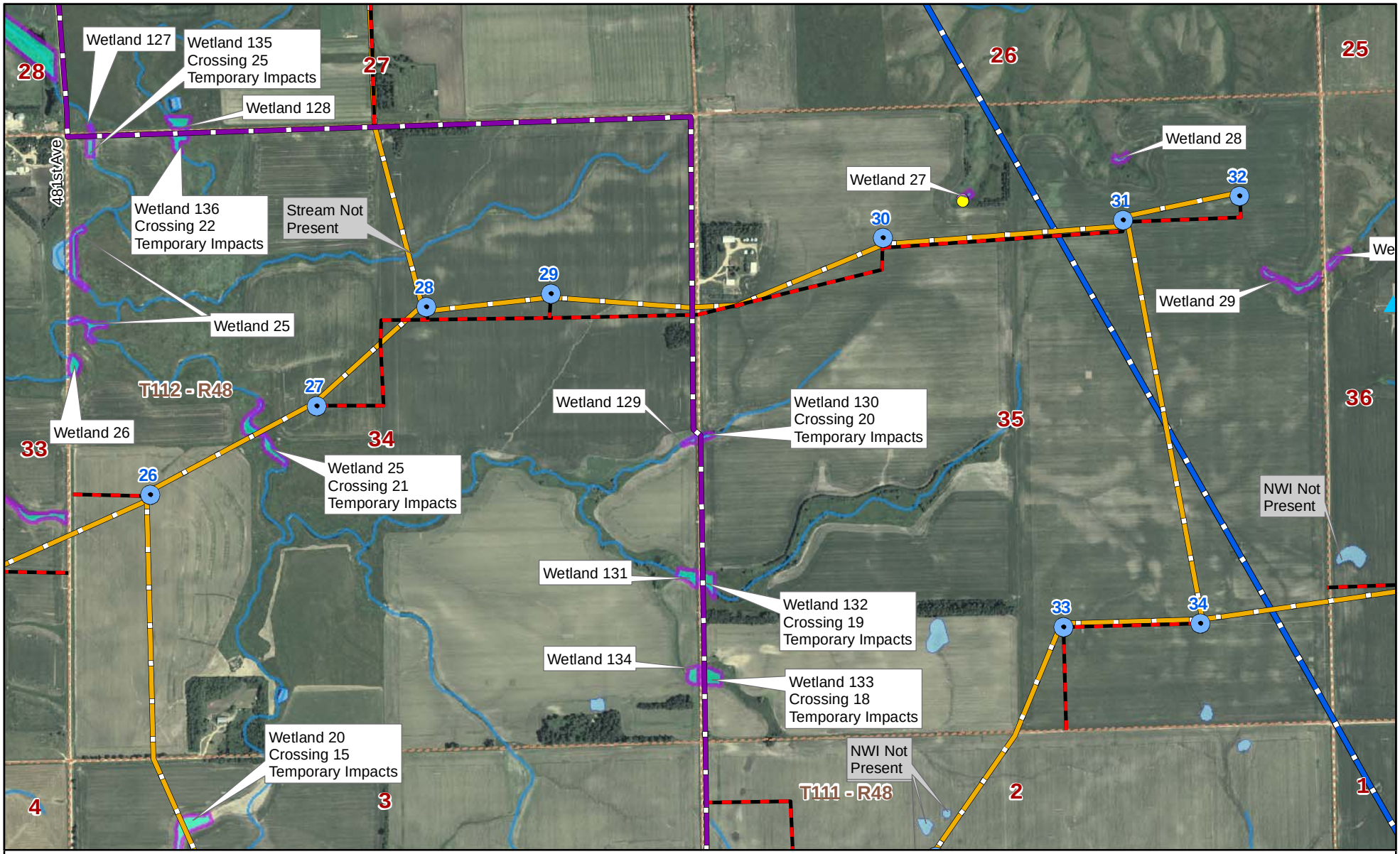

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IBERDROLA RENEWABLES

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Figure 14

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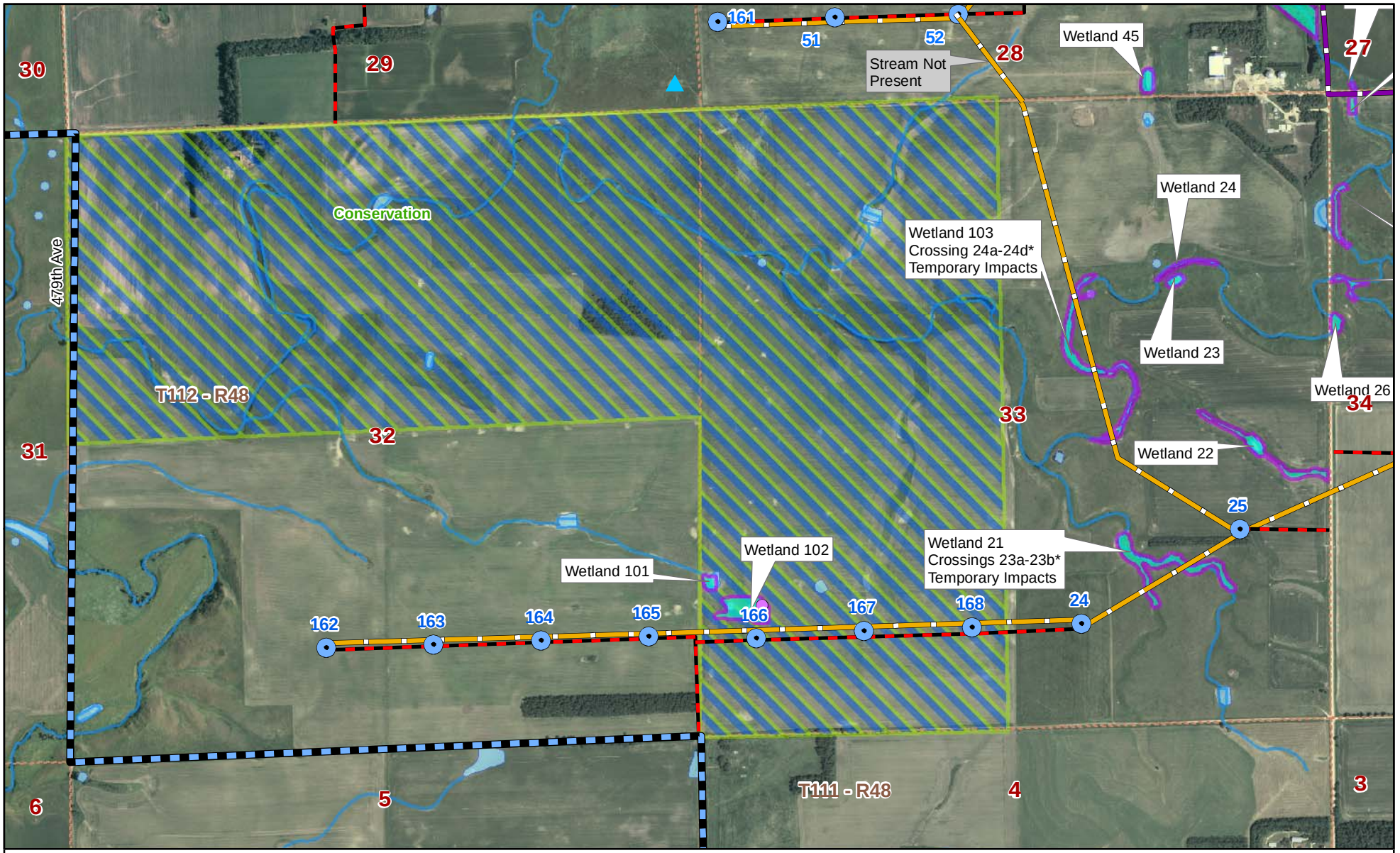
Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD



Site Boundary
Turbines
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0 250 500 1,000 Feet

Figure 15

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Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

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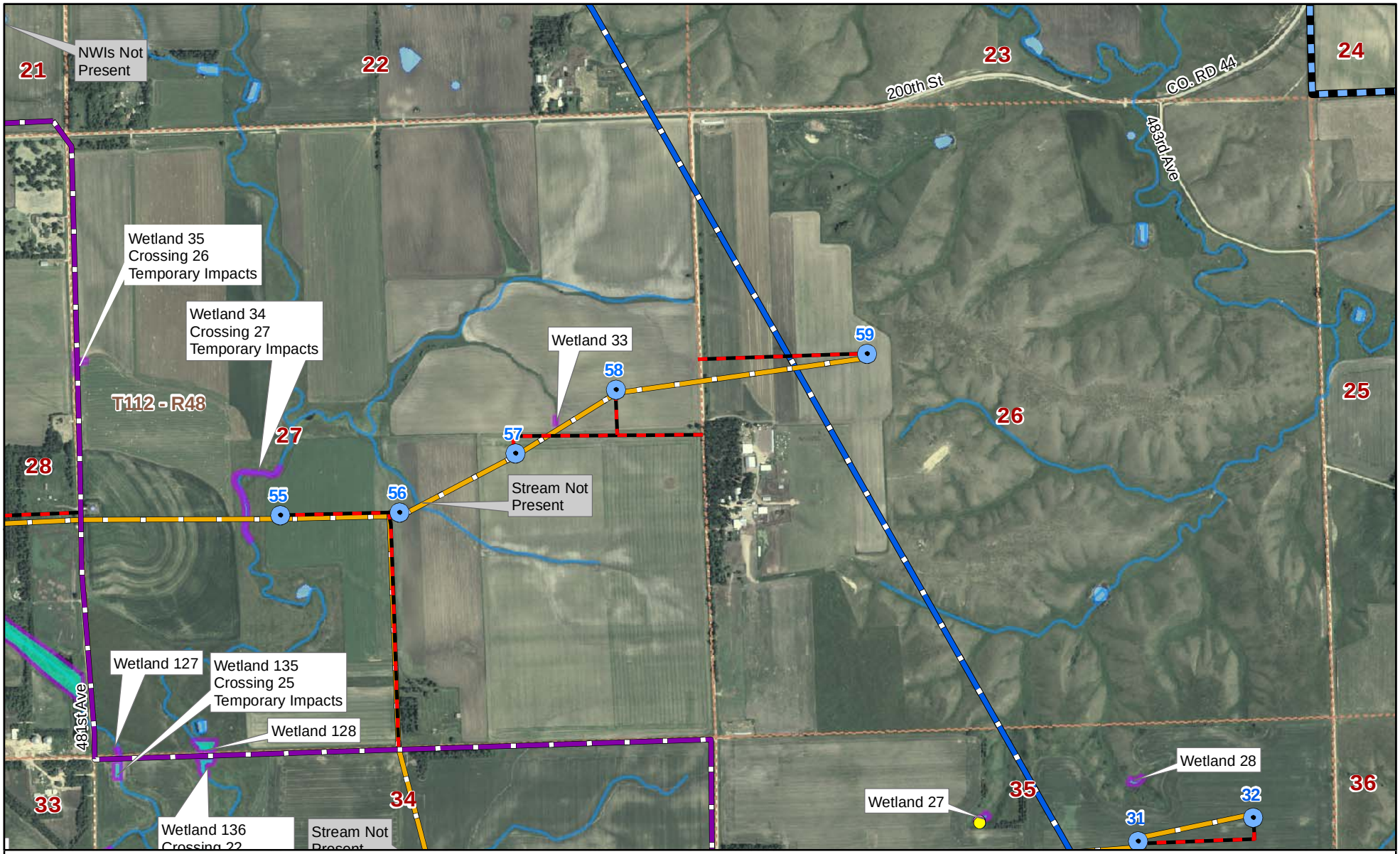

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IBERDROLA RENEWABLES

0 250 500 1,000 Feet

- Site Boundary
- Turbines
- Access Road
- Underground Cabling
- Permanent Met Towers
- Temporary Met Towers
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Figure 16

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Wetland Delineation Report
Buffalo Ridge II Wind Project
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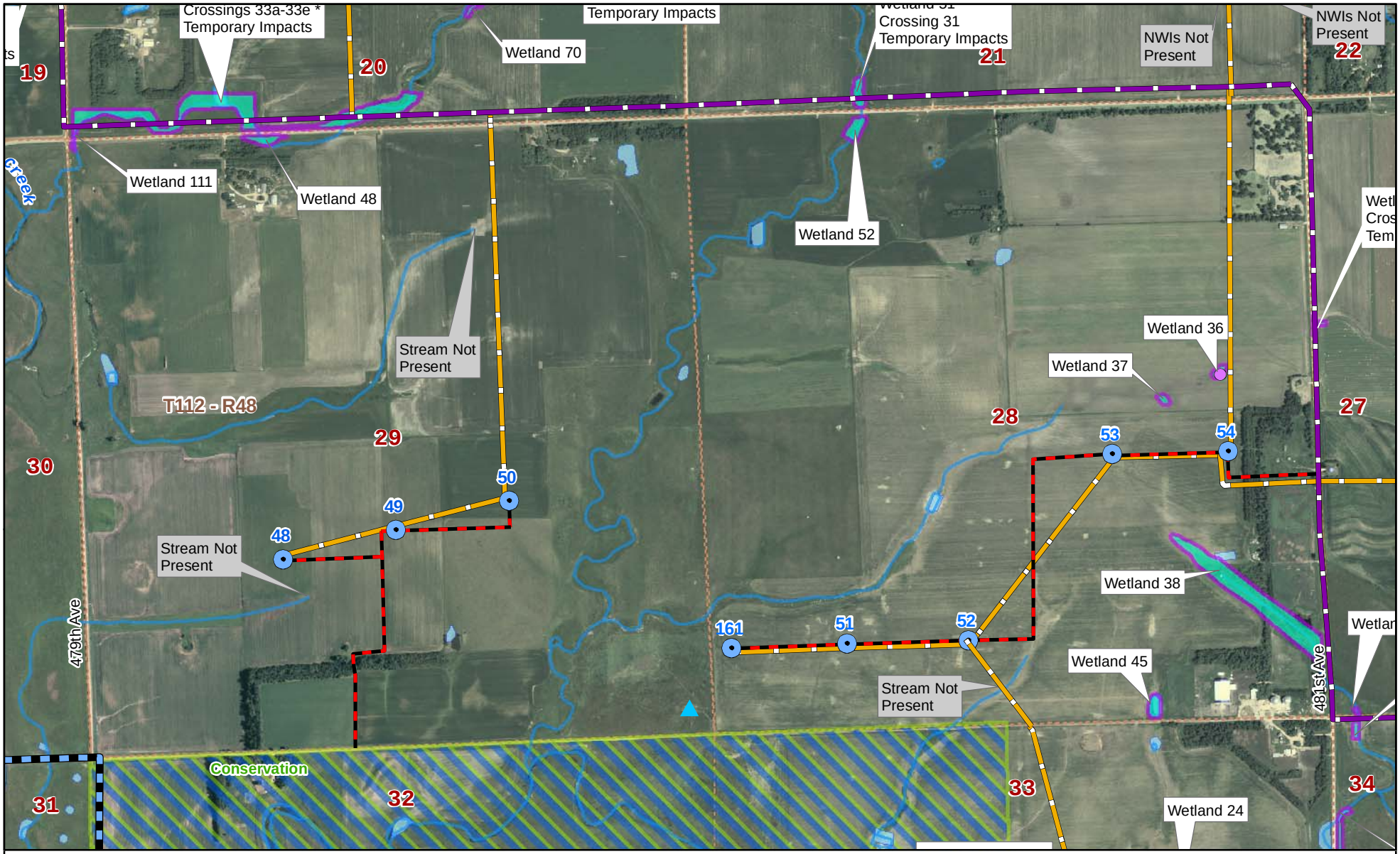

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Figure 17

November 2009

Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

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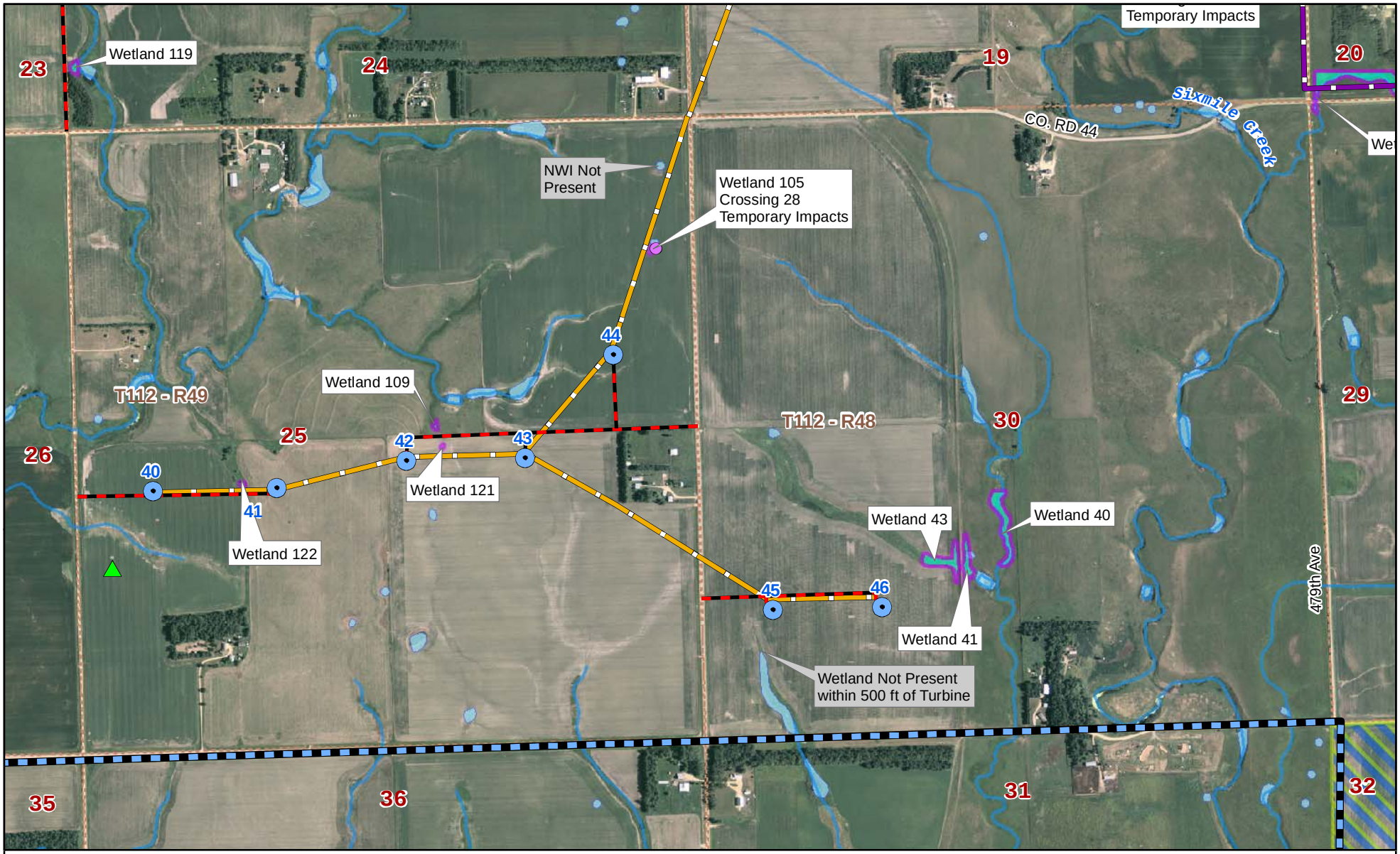

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Figure 18

November 2009

Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

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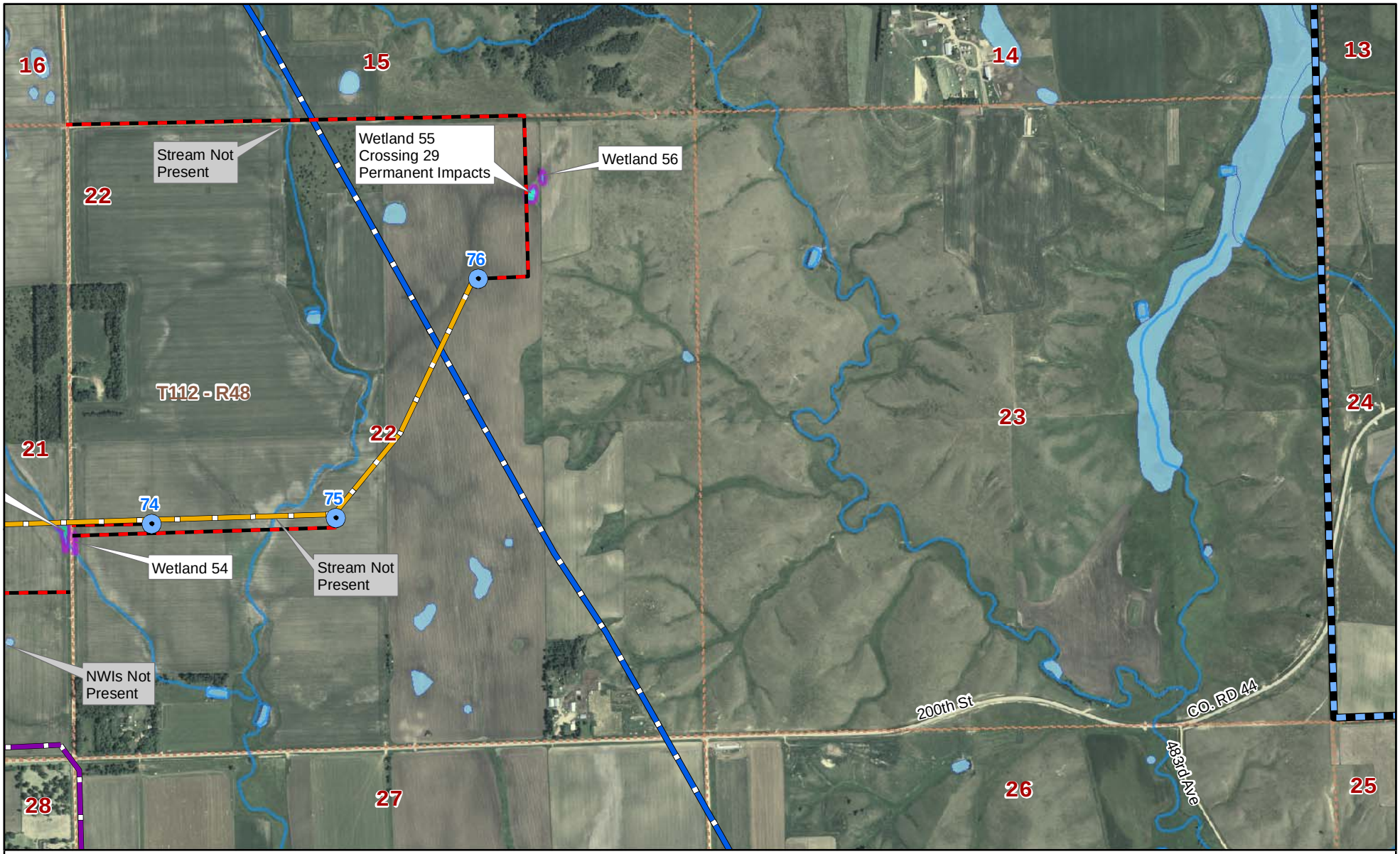

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Figure 19

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Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

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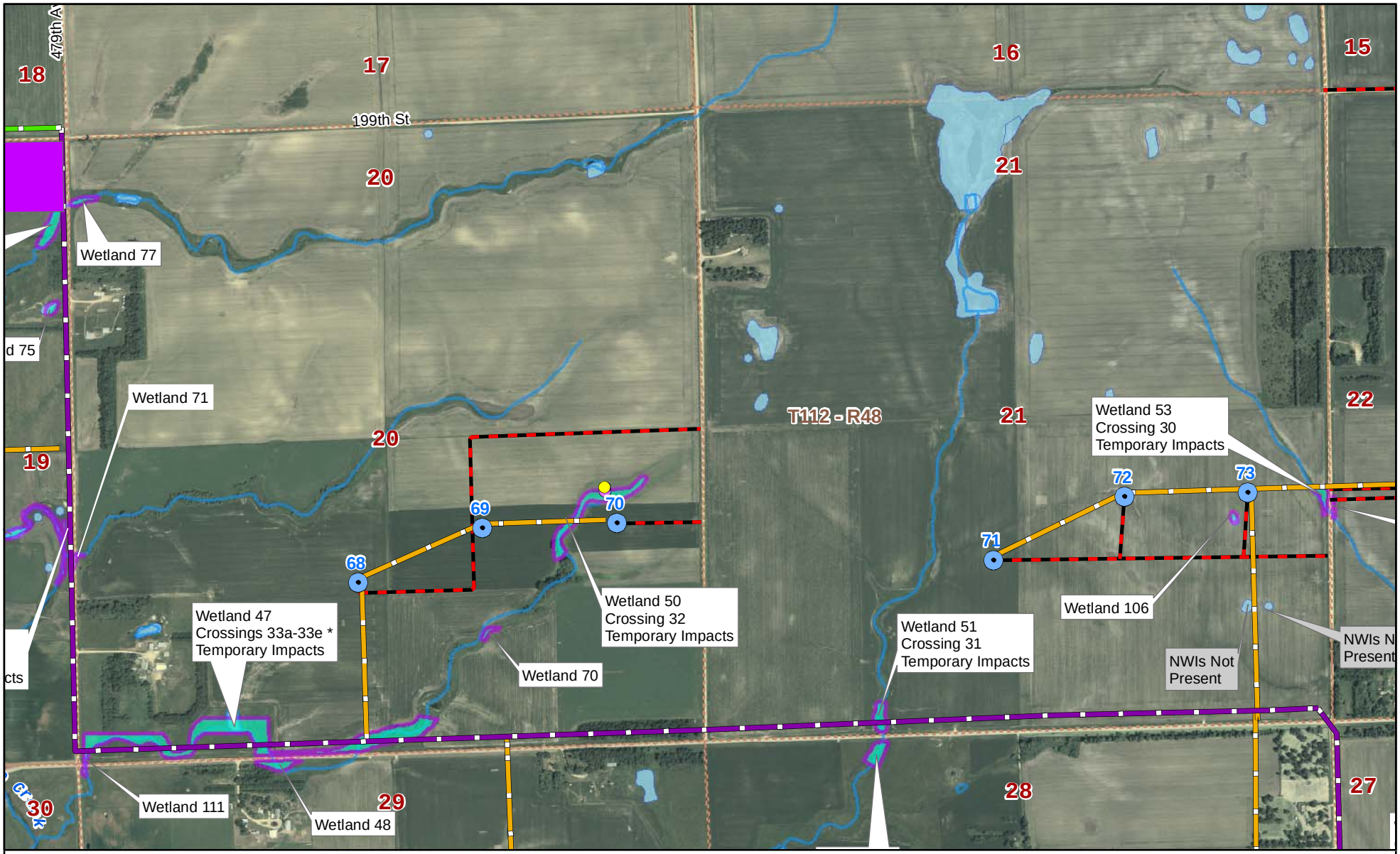

Figure 20

November 2009

Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

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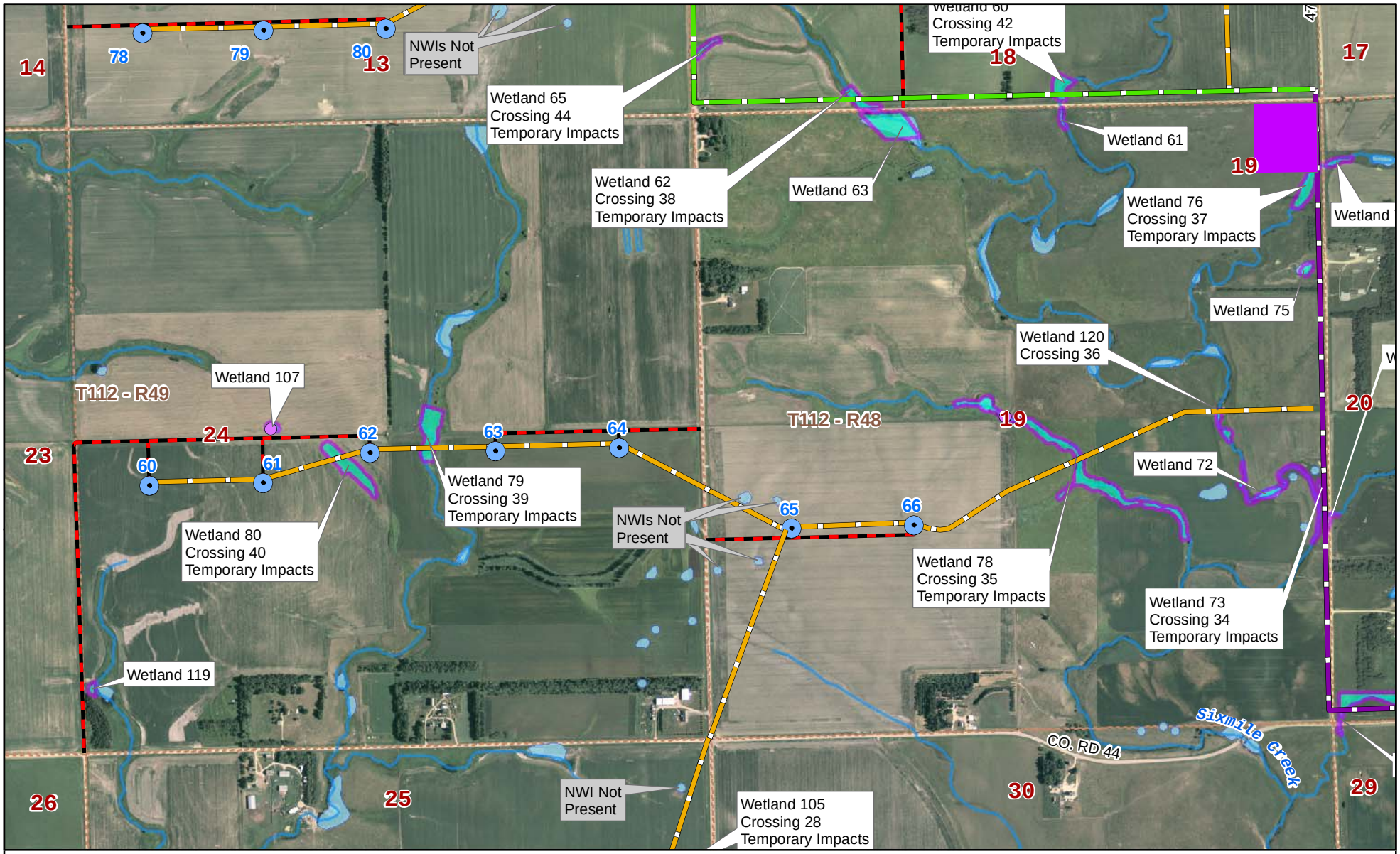

Figure 21

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Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

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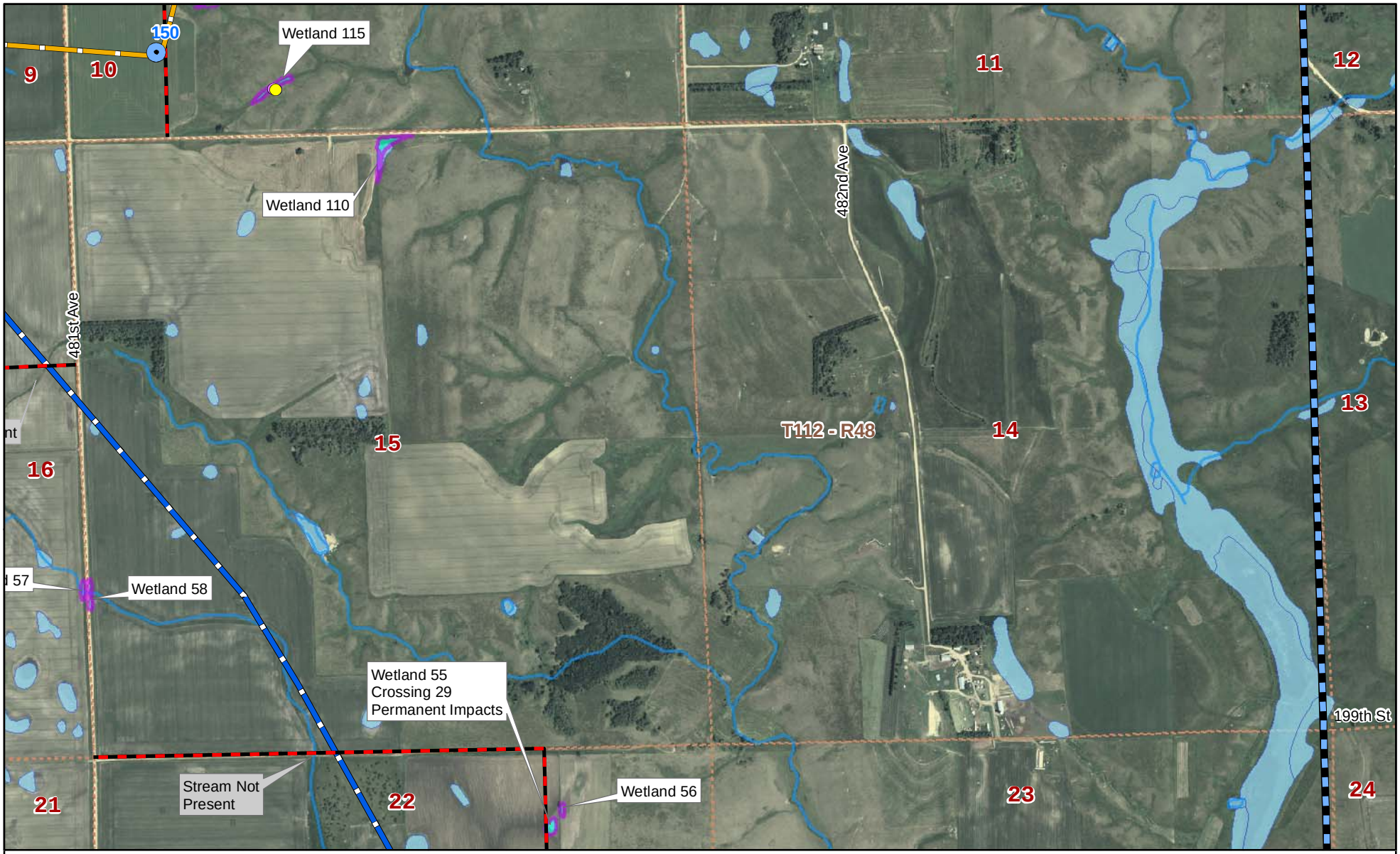

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0 250 500 1,000 Feet

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Figure 22

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Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

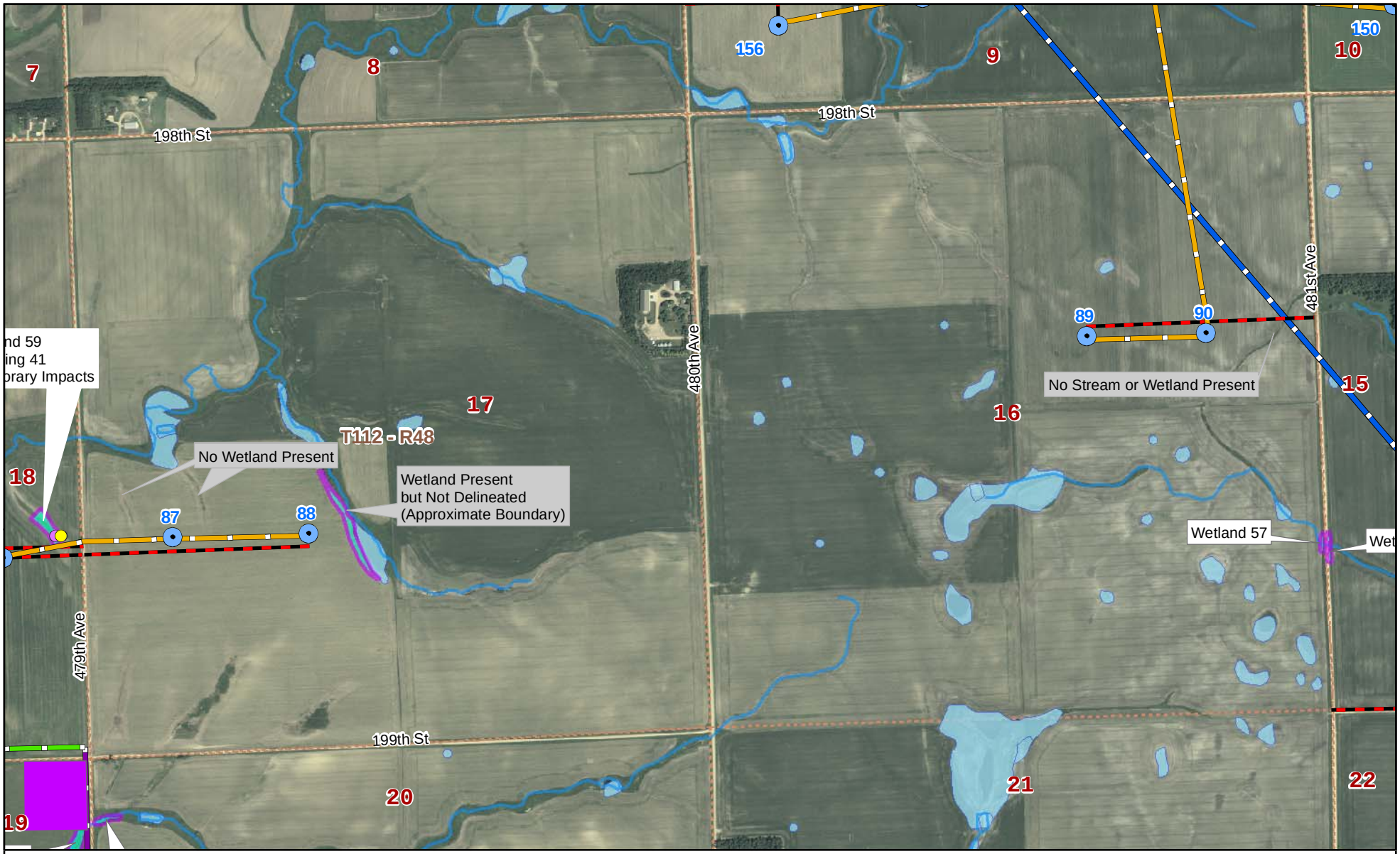

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Figure 23

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Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

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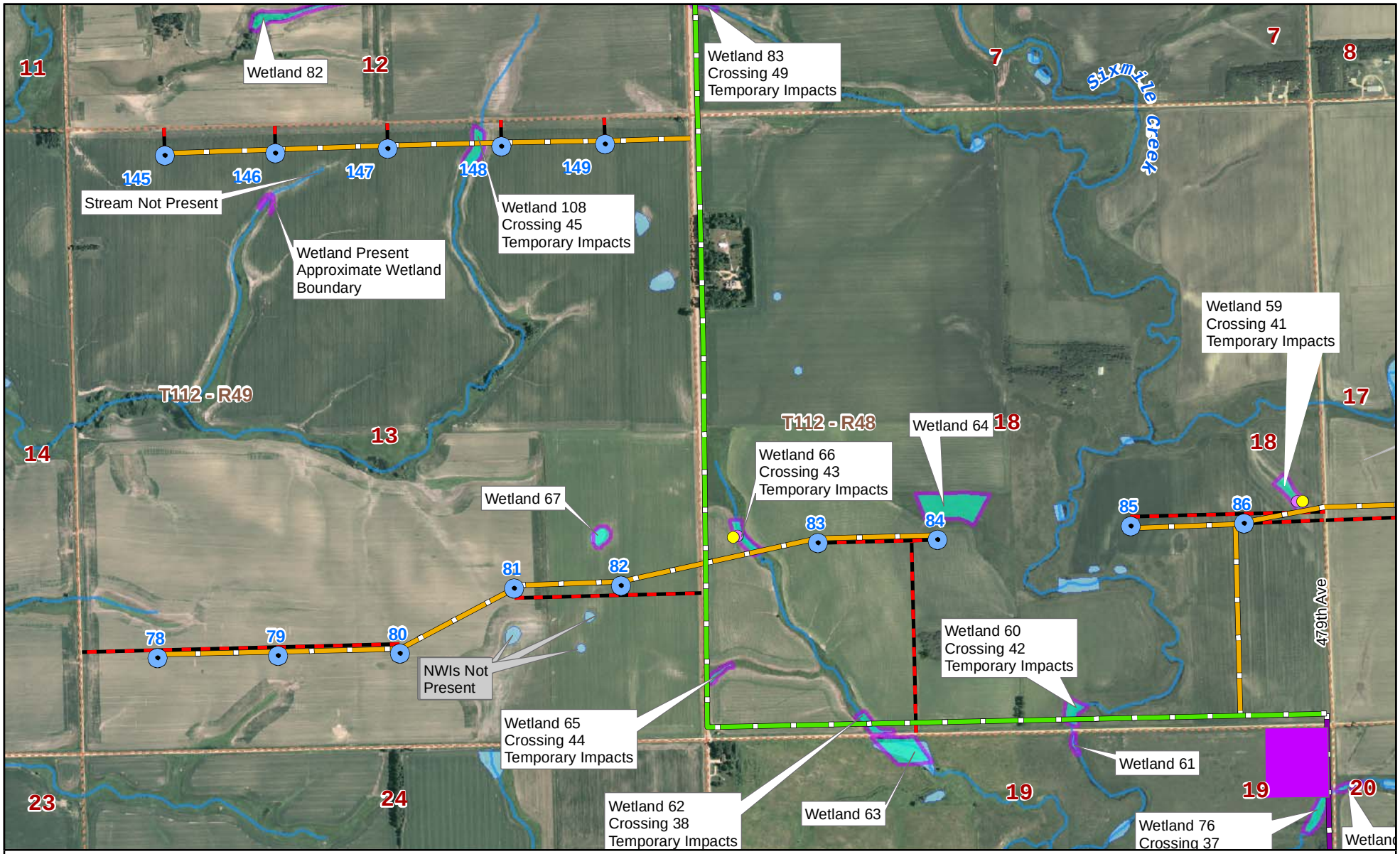

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0 250 500 1,000 Feet

Figure 24

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Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

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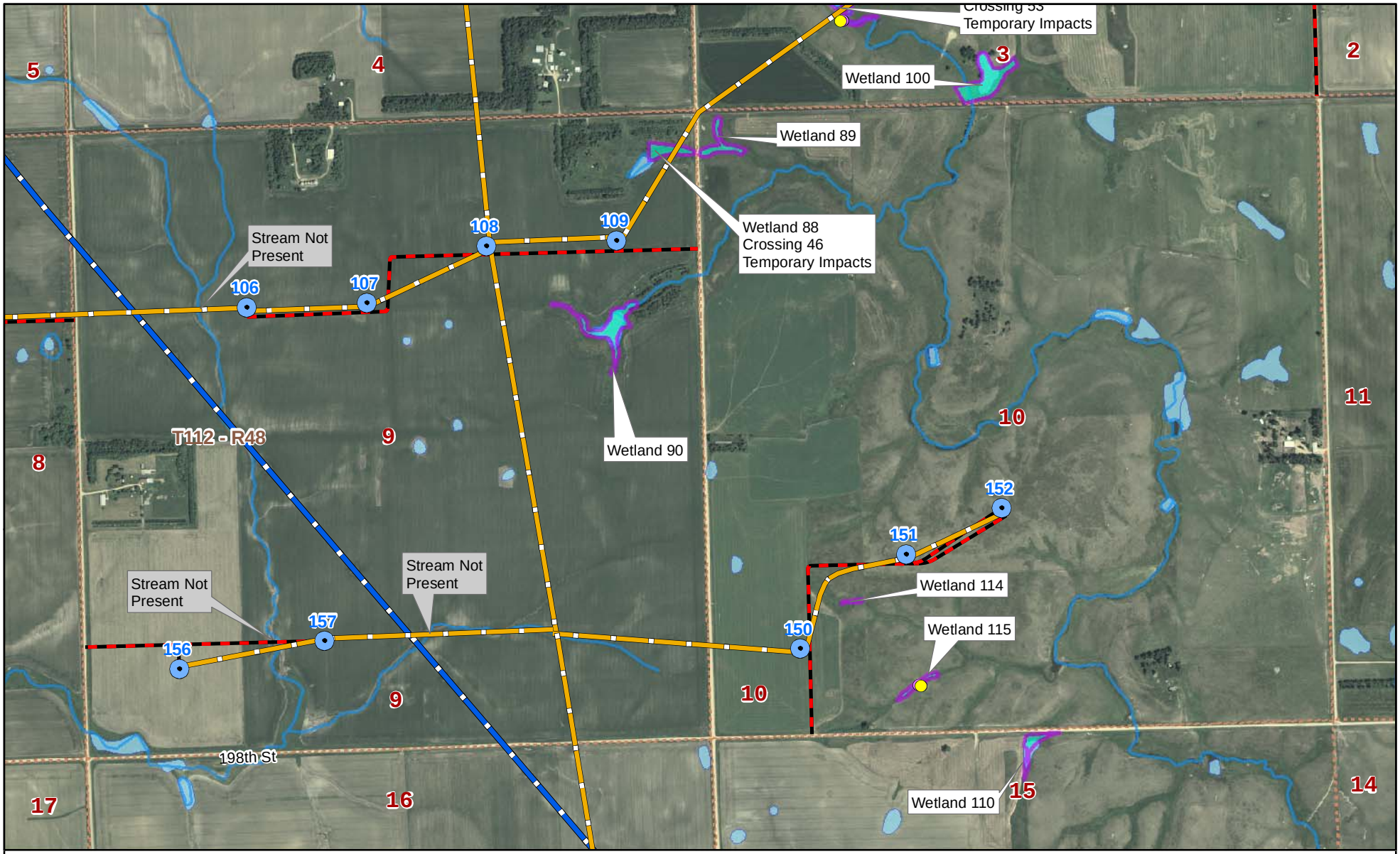

Site Boundary
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IBERDROLA RENEWABLES

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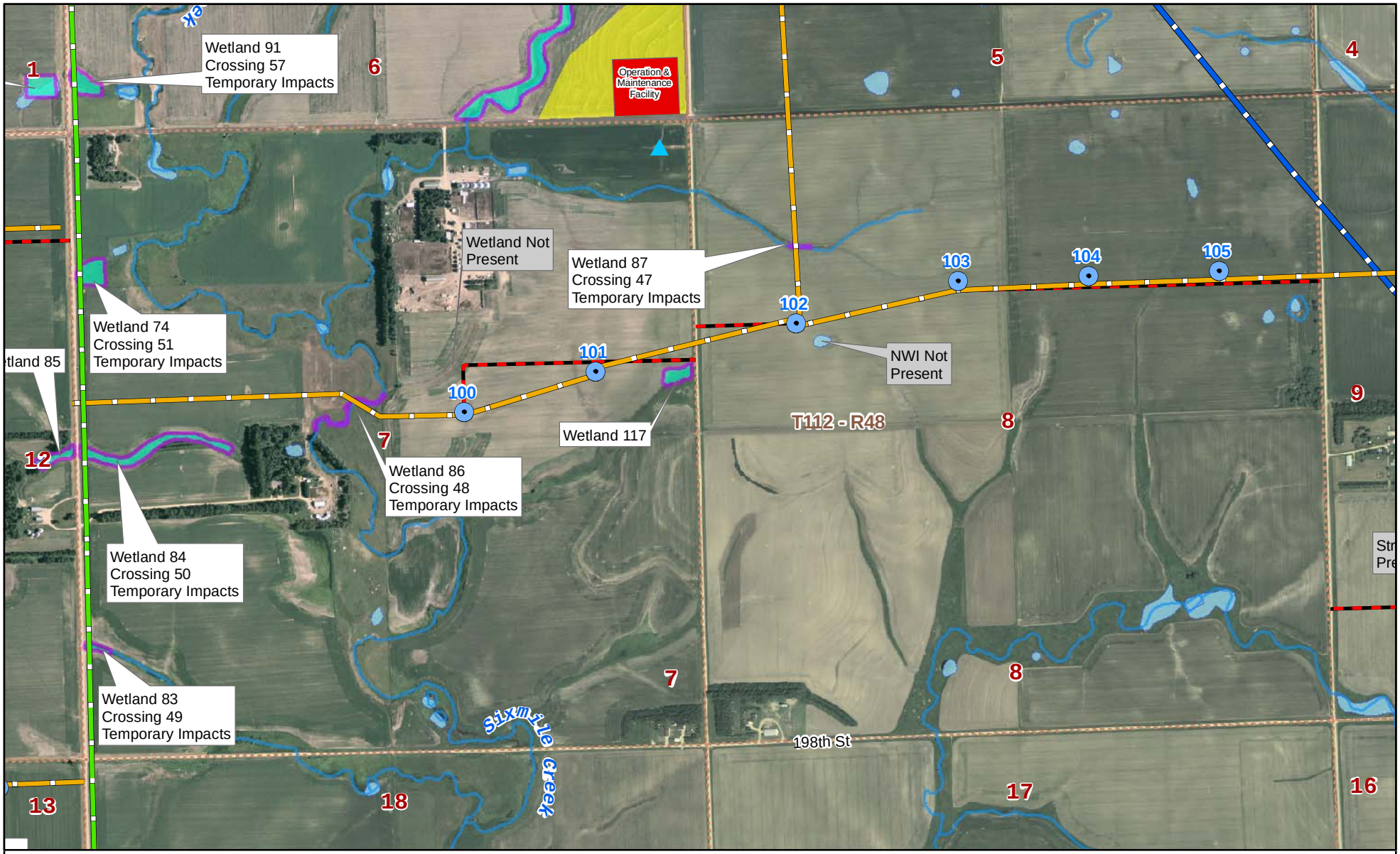
Figure 25

November 2009

Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD



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IBERDROLA RENEWABLES

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Figure 26

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Buffalo Ridge II Wind Project
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Brookings and Deuel Counties, SD

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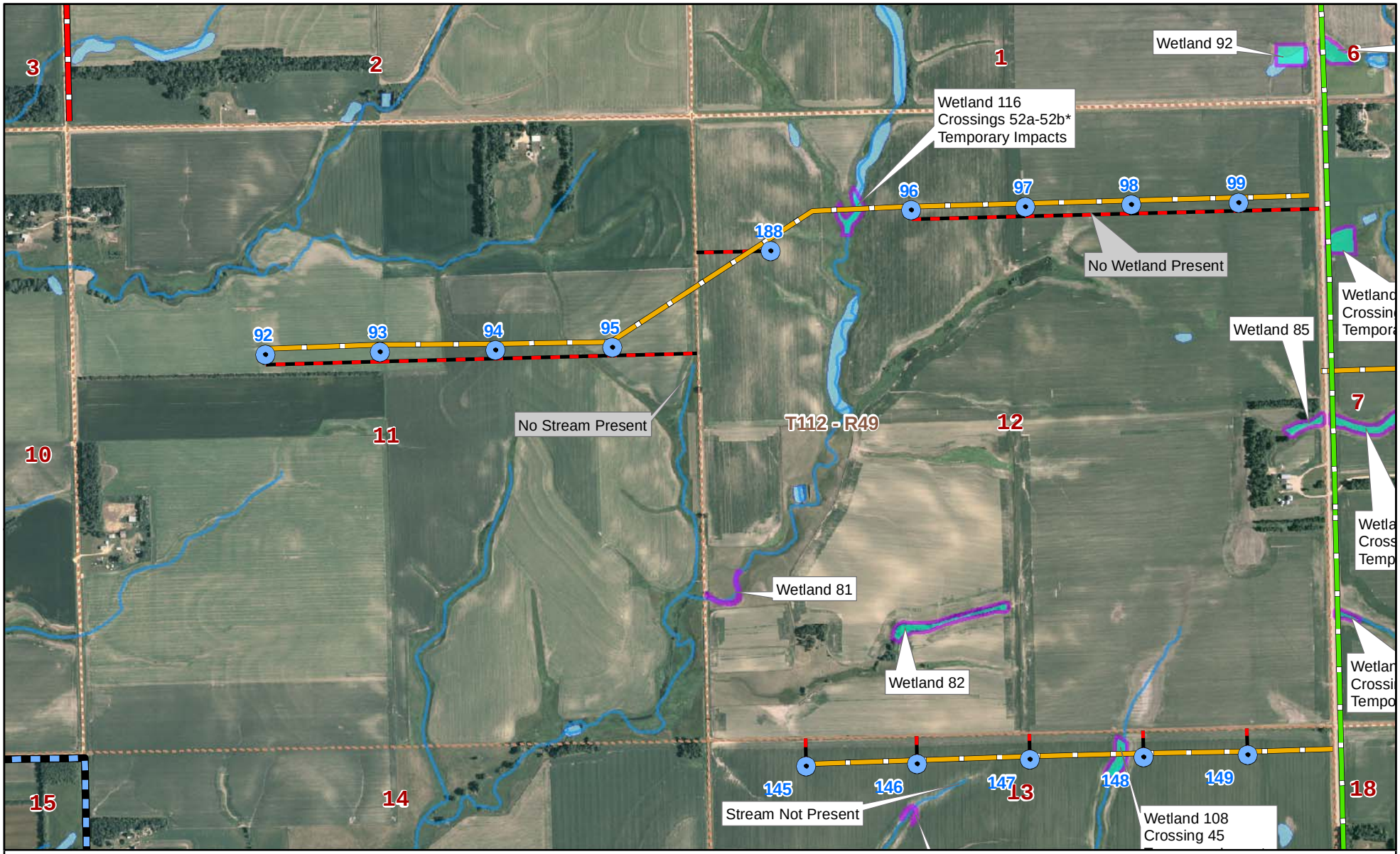

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IBERDROLA RENEWABLES

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Figure 27

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Wetland Delineation Report
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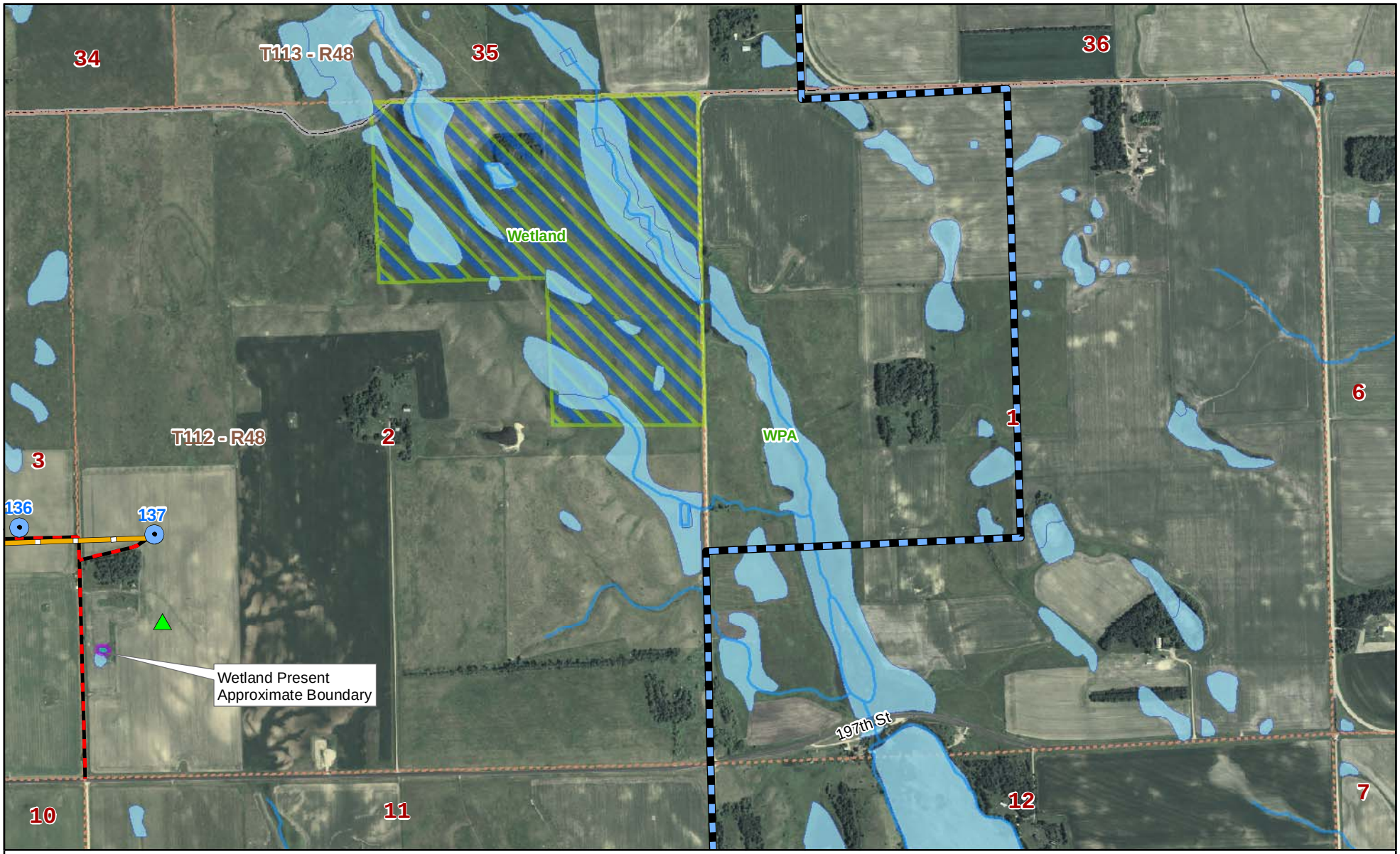

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IBERDROLA RENEWABLES

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Figure 28

November 2009

Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

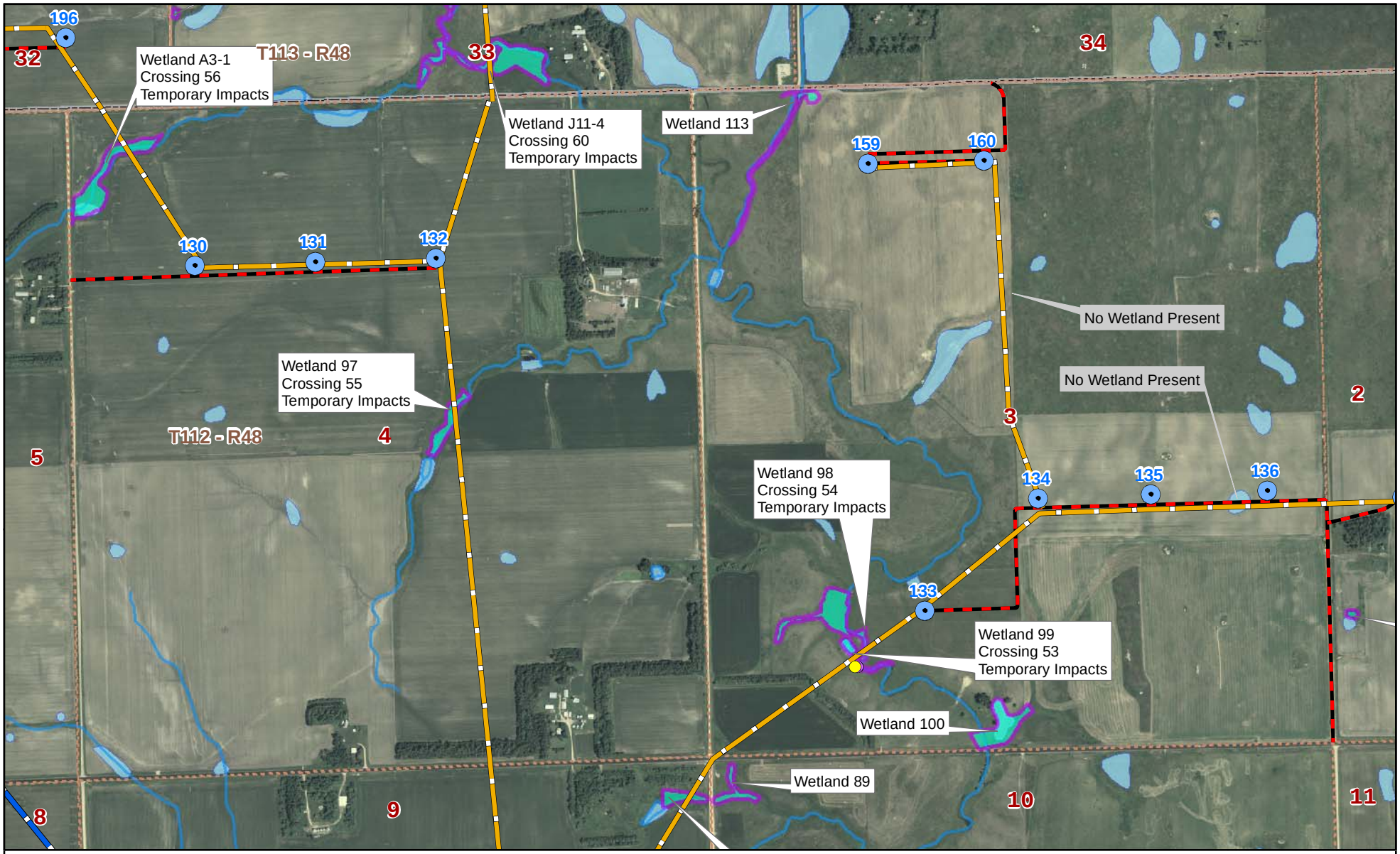

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Figure 29

November 2009

Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

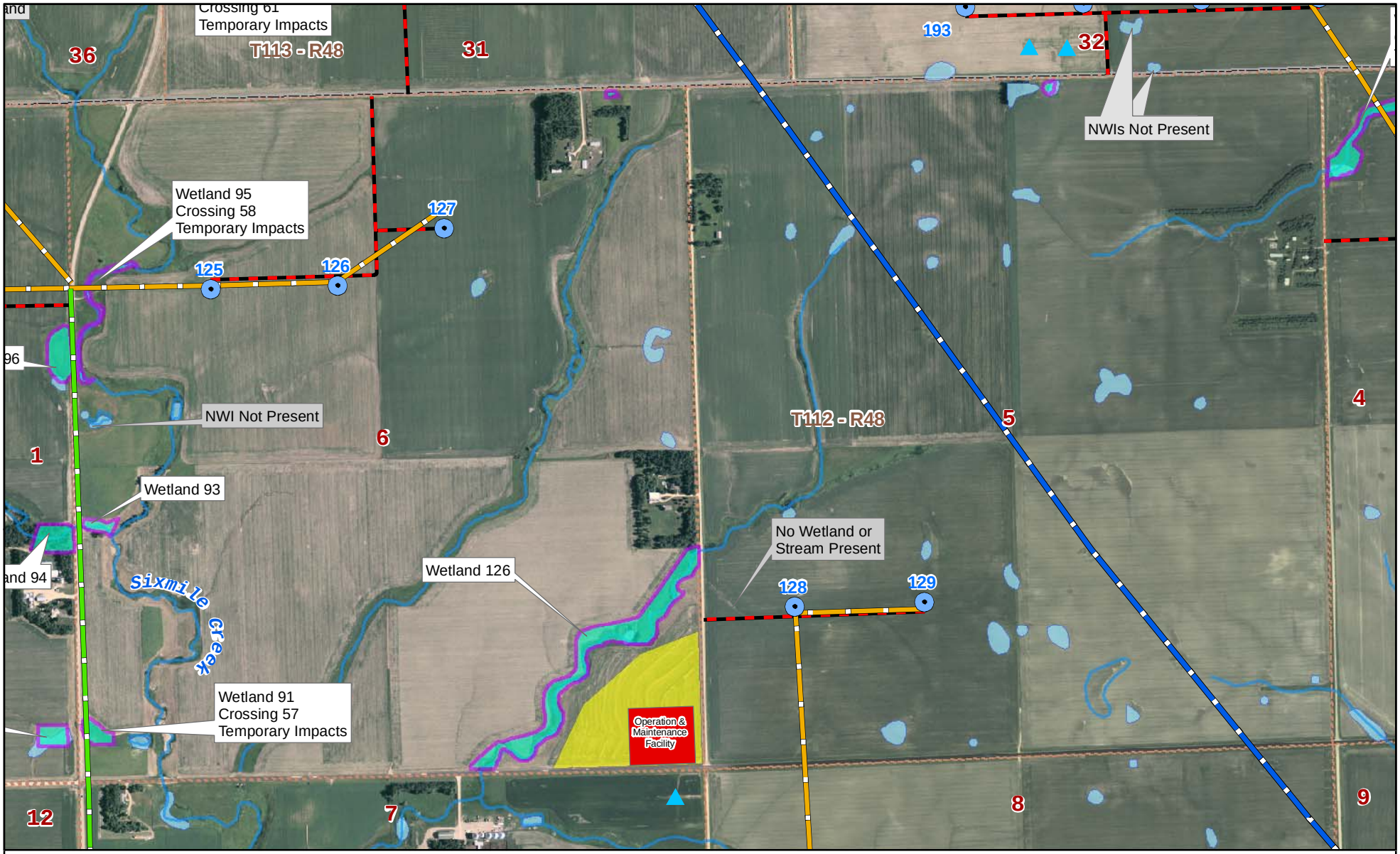

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Figure 30

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Buffalo Ridge II Wind Project
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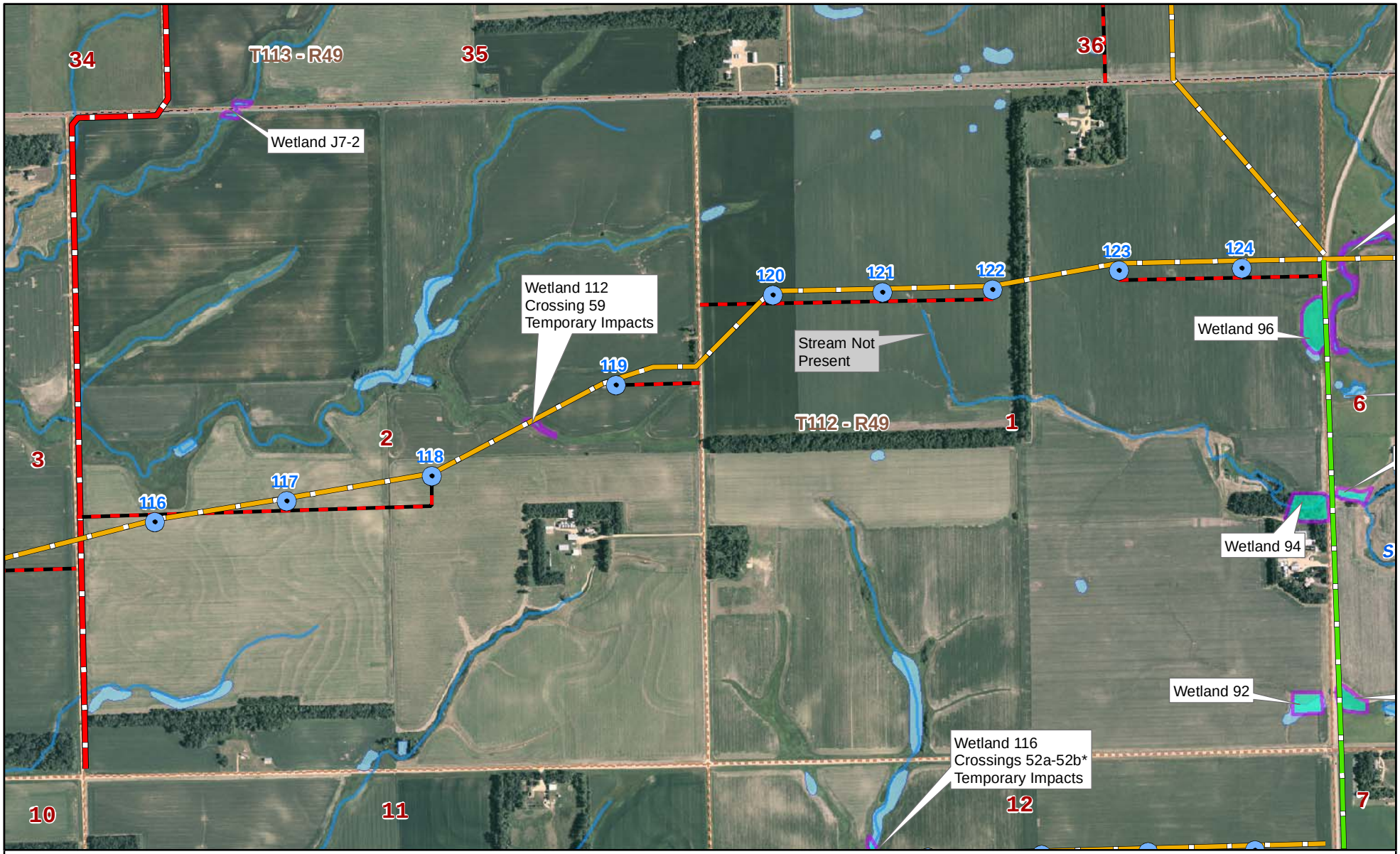

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Buffalo Ridge II Wind Project
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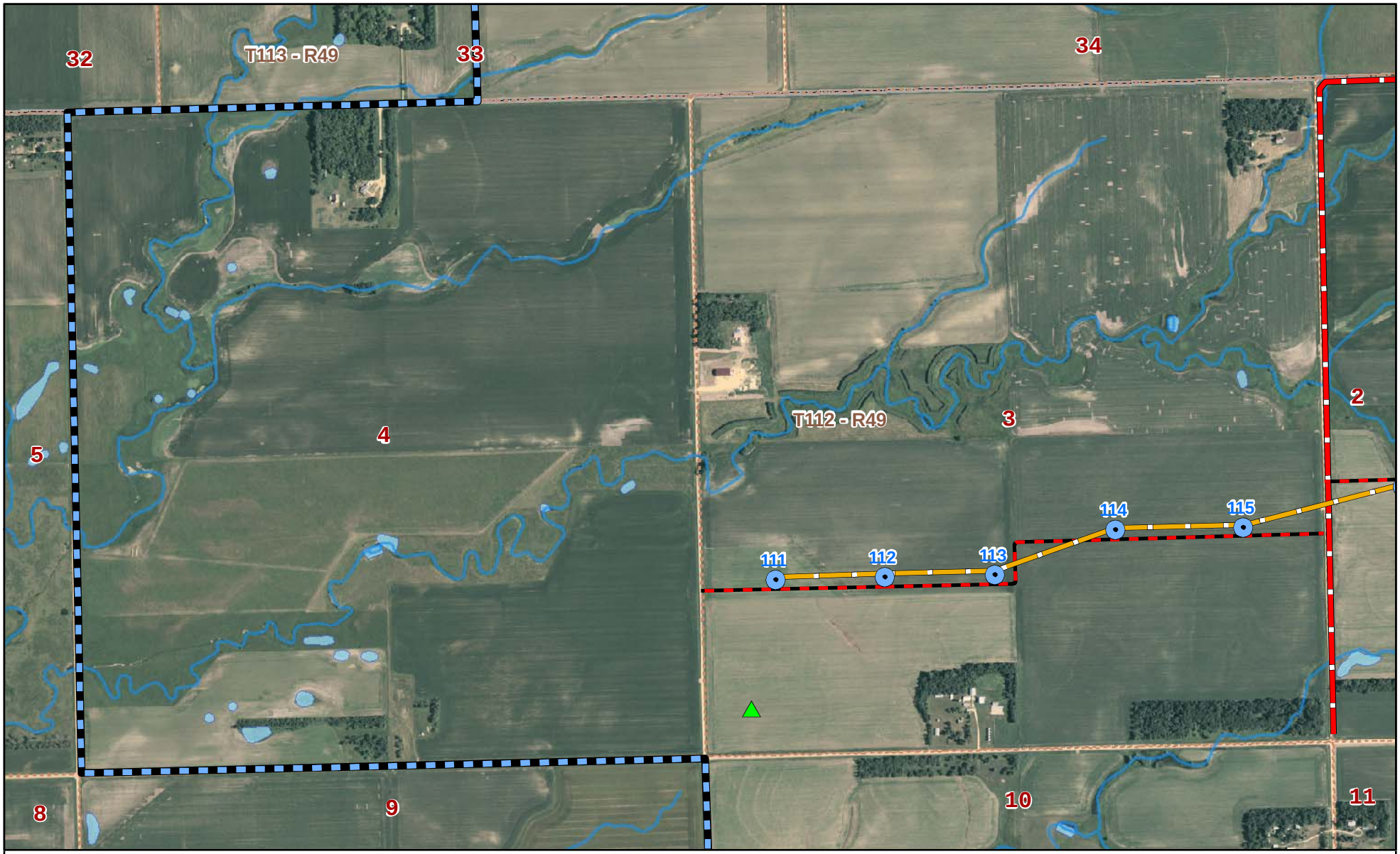

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Buffalo Ridge II Wind Project
Iberdrola Renewables
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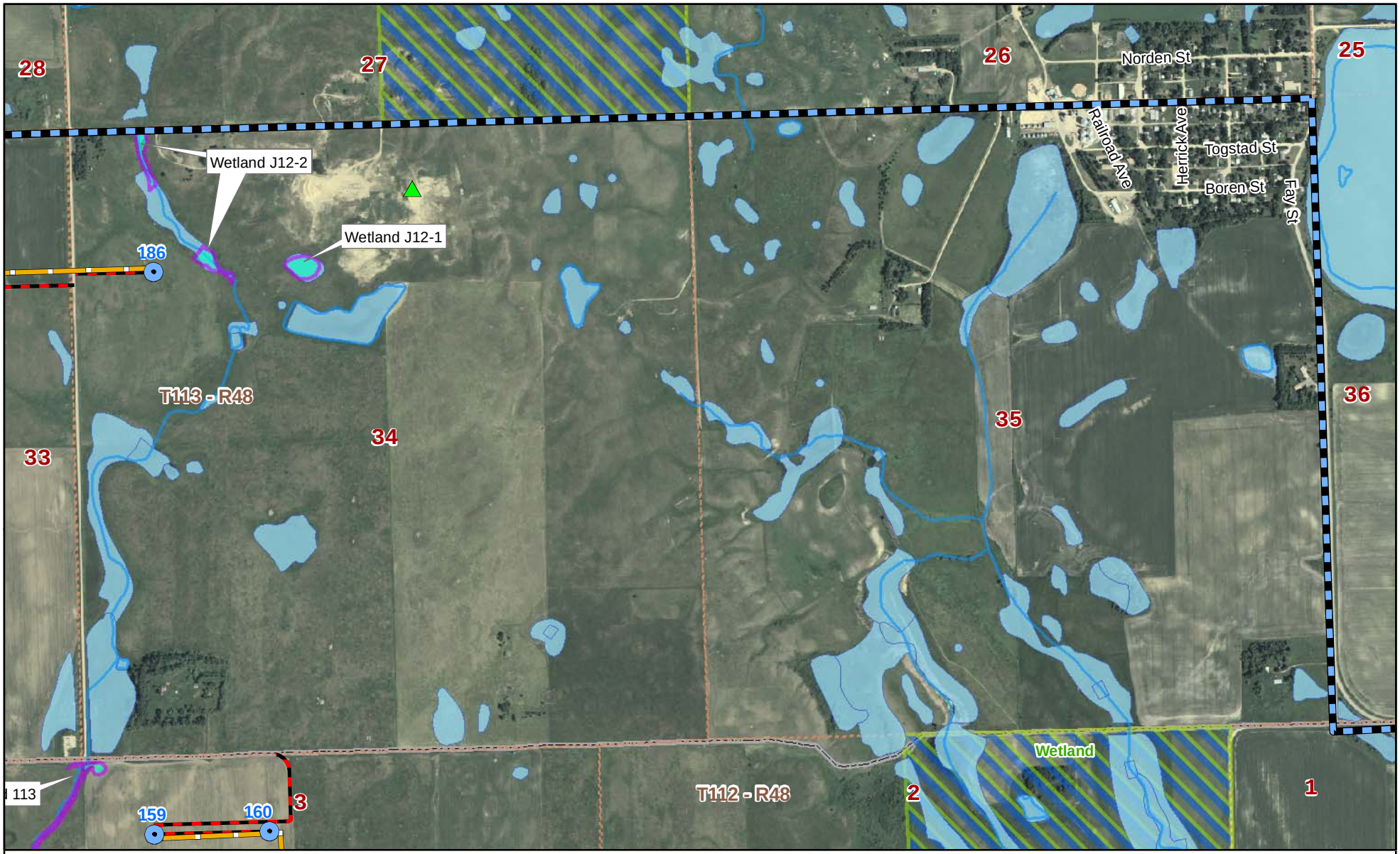

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Figure 33

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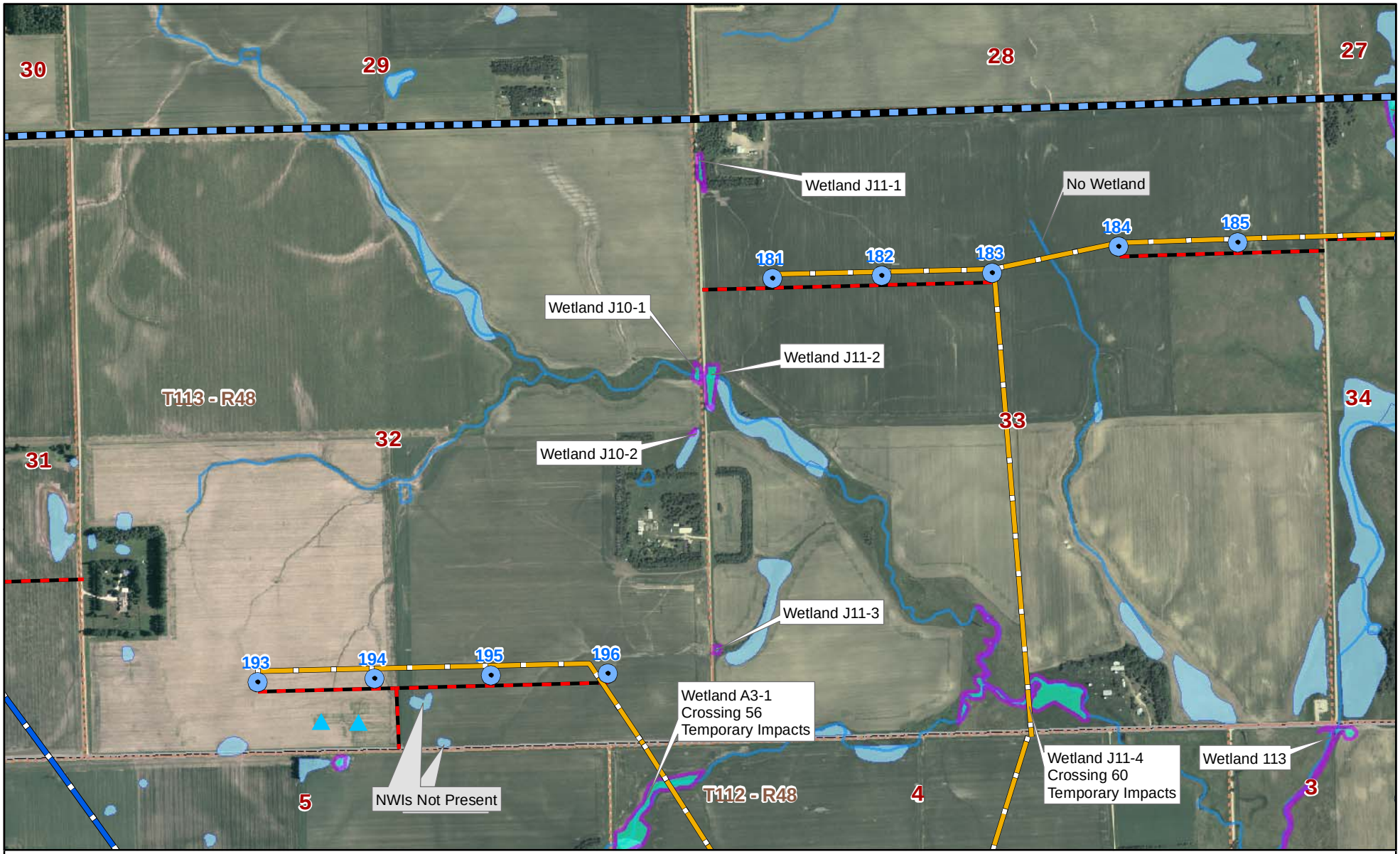
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD



HDR

IBERDROLA RENEWABLES

0 250 500 1,000 Feet

Site Boundary
Turbines
Access Road
Underground Cabling
Permanent Met Towers
Temporary Met Towers
Project Substation

Proposed Overhead Transmission Line
115 kV
34.5 kV
Existing Transmission Line
115 kV
345 kV
O&M Facility
Temporary Laydown Area

Wetland Data Points
Upland Data Points
Delineated Wetlands
NWI Wetlands
USGS Streams
USFWS Wetland Easement

*Note : * - Denotes Multiple Crossings*

Figure 34

November 2009

Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

Map Document: (Z:\PPM\79112\map_docs\mxd\Wetland_Delineation\BRII_WetlandDel_Mapbook_Dec_Final_copy.mxd)
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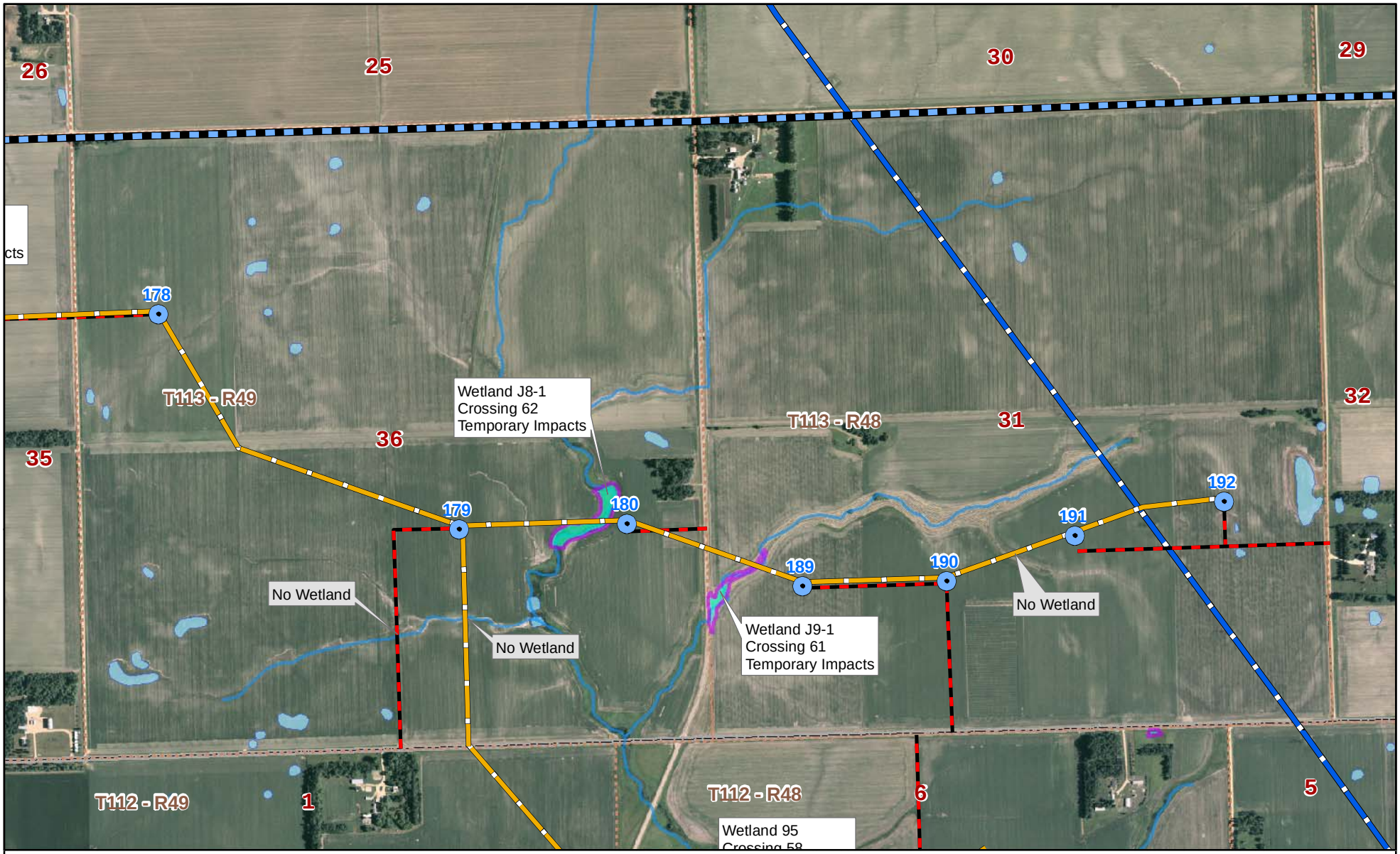

HDR

IBERDROLA RENEWABLES

0 250 500 1,000 Feet

Site Boundary
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Wetland Data Points
Upland Data Points
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USGS Streams
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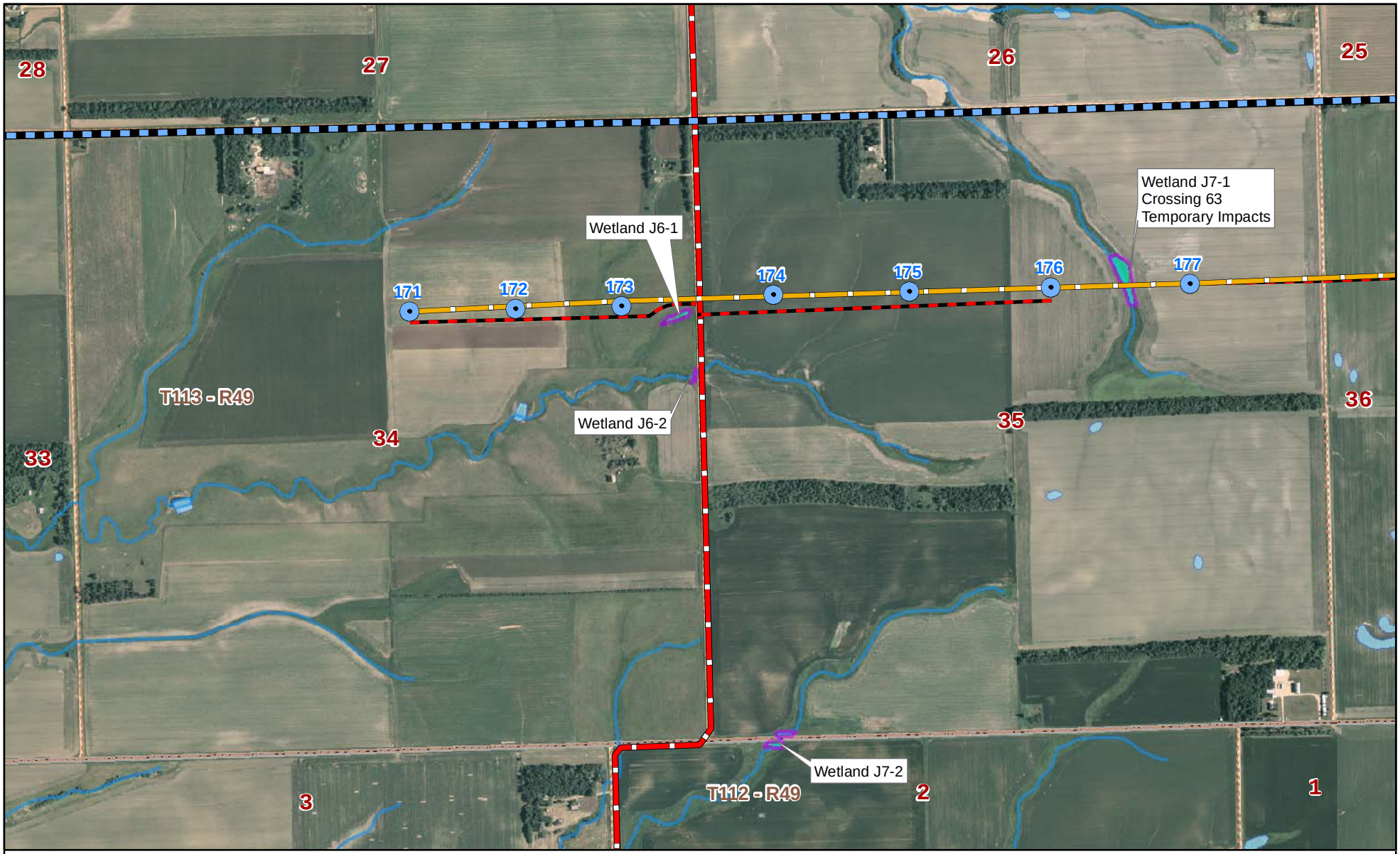
*Note : * - Denotes Multiple Crossings*

Figure 35

November 2009

Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

Map Document: (Z:\PPM\79112\map_docs\mxd\Wetland_Delineation\BRII_WetlandDel_Mapbook_Dec_Final_copy.mxd)
11/25/2009 -- 2:34:38 PM



HDR

IBERDROLA RENEWABLES

0 250 500 1,000 Feet

Site Boundary
Turbines
Access Road
Underground Cabling
Permanent Met Towers
Temporary Met Towers
Project Substation

Proposed Overhead Transmission Line
115 kV
34.5 kV
Existing Transmission Line
115 kV
345 kV
O&M Facility
Temporary Laydown Area

Wetland Data Points
Upland Data Points
Delineated Wetlands
NWI Wetlands
USGS Streams
USFWS Wetland Easement

*Note : * - Denotes Multiple Crossings*

Figure 36

November 2009

Wetland Delineation Report
Buffalo Ridge II Wind Project
Iberdrola Renewables
Brookings and Deuel Counties, SD

Map Document: (Z:\PPM\79112\map_docs\mxd\Wetland_Delineation\BRII_WetlandDel_Mapbook_Dec_Final_copy.mxd)
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Appendix A
Climatic Data

Daily Climatic Data
Brookings, South Dakota Station
May - July 2008

Date	Minimum Temp. (F)	Maximum Temp. (F)	Precipitation (in.)
5/1/2008	68	37	0
5/2/2008	62	43	0.10
5/3/2008	43	30	0
5/4/2008	57	34	0
5/5/2008	68	40	0
5/6/2008	74	42	0
5/7/2008	65	44	0.30
5/8/2008	64	42	0
5/9/2008	50	43	0
5/10/2008	57	44	0.41
5/11/2008	48	33	1.57
5/12/2008	57	37	0
5/13/2008	72	37	0
5/14/2008	49	37	0.10
5/15/2008	66	46	0
5/16/2008	67	49	0
5/17/2008	80	49	0
5/18/2008	74	40	0
5/19/2008	65	46	0
5/20/2008	77	44	0
5/21/2008	64	39	0
5/22/2008	67	41	0
5/23/2008	71	46	0
5/24/2008	68	52	0
5/25/2008	75	53	0
5/26/2008	85	49	0
5/27/2008	69	44	0
5/28/2008	56	44	0
5/29/2008	69	49	0.29
5/30/2008	62	54	0.29
5/31/2008	78	55	0
6/1/2008	82	56	0
6/2/2008	82	63	0
6/3/2008	69	51	0.54
6/4/2008	62	53	Trace
6/5/2008	73	58	0.23
6/6/2008	64	58	1.26
7/1/2008	84	60	0

Date	Minimum Temp. (F)	Maximum Temp. (F)	Precipitation (in.)
7/2/2008	90	64	0
7/3/2008	74	47	0
7/4/2008	74	54	0
7/5/2008	82	60	0
7/6/2008	87	70	0
7/7/2008	89	65	0
7/8/2008	89	62	0
7/9/2008	82	62	0
7/10/2008	86	66	0
7/11/2008	94	70	0
7/12/2008	80	60	0
7/13/2008	80	58	0
7/14/2008	82	59	0
7/15/2008	92	67	0
7/16/2008	90	63	0
7/17/2008	90	67	0
7/18/2008	81	60	0.27
7/19/2008	79	63	0.62
7/20/2008	85	60	0
7/21/2008	87	64	0.02
7/22/2008	82	62	0
7/23/2008	82	59	0
7/24/2008	79	61	0
7/25/2008	87	65	0
7/26/2008	87	59	0
7/27/2008	85	65	0.64
7/28/2008	79	63	0
7/29/2008	83	56	0
7/30/2008	88	67	0
7/31/2008	88	64	0.40

Daily Climatic Data
Brookings, South Dakota Station
August - September 2009

Date	Minimum Temp. (F)	Maximum Temp. (F)	Precipitation (in.)
8/15/2009	68	75	0.08
8/16/2009	62	73	0.46
8/17/2009	55	71	0.00
8/18/2009	50	75	0.00
8/19/2009	62	73	0.07
8/20/2009	53	71	0.04
8/21/2009	57	62	0.01
8/22/2009	48	71	0.00
8/23/2009	55	78	0.00
8/24/2009	60	82	0.00
8/25/2009	60	75	0.00
8/26/2009	51	71	0.00
8/27/2009	46	75	0.00
8/28/2009	55	69	0.00
8/29/2009	46	66	0.00
8/30/2009	39	68	0.00
8/31/2009	42	68	0.00
9/1/2009	46	69	0.00
9/2/2009	55	69	0.00
9/3/2009	60	71	0.00
9/4/2009	46	71	0.00
9/5/2009	46	77	0.00
9/6/2009	55	75	0.00
9/7/2009	53	75	0.00
9/8/2009	64	80	0.00
9/9/2009	62	77	0.00
9/10/2009	59	78	0.00
9/11/2009	60	73	0.02
9/12/2009	53	75	0.00
9/13/2009	51	78	0.00
9/14/2009	57	75	0.00

Daily Climatic Data
Brookings, South Dakota Station
October - November 2009

Date	Minimum Temp. (F)	Maximum Temp. (F)	Precipitation (in.)
10/19/2009	35	51	0.00
10/20/2009	39	48	0.00
10/21/2009	39	46	0.42
10/22/2009	33	37	0.00
10/23/2009	32	46	0.00
10/24/2009	28	50	0.00
10/25/2009	35	44	0.00
10/26/2009	28	51	0.00
10/27/2009	35	55	0.00
10/28/2009	39	50	0.01
10/29/2009	48	53	0.41
10/30/2009	33	51	0.72
10/31/2009	30	44	0.00
11/1/2009	39	62	0.00
11/2/2009	30	48	0.00
11/3/2009	26	46	0.00
11/4/2009	33	46	0.00
11/5/2009	28	57	0.00
11/6/2009	39	66	0.00
11/7/2009	37	59	0.00
11/8/2009	39	53	0.00
11/9/2009	26	59	0.00
11/10/2009	30	53	0.00
11/11/2009	44	53	0.00
11/12/2009	53	53	0.00
11/13/2009	42	50	0.00
11/14/2009	35	44	0.01
11/15/2009	19	44	0.00
11/16/2009	21	46	0.00
11/17/2009	17	48	0.00
11/18/2009	17	48	0.00

Monthly Climate Summary
Brookings, South Dakota Station
1971-2000

Element	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
Average Max °F	21.5	28.0	39.7	55.5	68.9	78.0	82.7	80.6	71.8	58.9	39.6	26.1	54.3
Average Min °F	0.3	7.8	20.5	32.8	44.4	54.2	58.6	56.6	46.3	33.6	20.3	6.5	31.8
Average Temp °F	10.9	17.9	30.1	44.2	56.7	66.1	70.7	68.6	59.1	46.3	30.0	16.3	43.1
Average Total Precipitation (in)	0.34	0.40	1.29	2.03	2.95	4.23	3.11	2.94	2.48	1.78	1.00	.26	22.81

Appendix B
Wetland Determination Data Sheets

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 002 - Upland **Date:** 6/4/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Crop field- soybeans.

Topographic Location: Gentle slope between grassy riparian buffer and agricultural field.

Section: 25
TWN: 111
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? Yes
Soils: No
Vegetation: Yes
Hydrology: No

Disturbance Comment: Under agricultural production.

Delineation Problem Area? No
Normal Conditions Present On-Site? Yes
Explain:

Vegetation

Herb *% total cover: 30*	% Cover	Ind.	Dom
1 *Glycine max*	25	NI	Yes
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 0 % = 0/1

Hydrophytic Vegetation Criteria Met? **No** **NWI Class:** Upland

Soils

Series Name: MCINTOSH-LAMOURE SILTY CLAY LOAMS, 0 TO 2 P **Drainage Class:** Somewhat poorly drained

Taxomony: Fine-silty, frigid Aeric Calciaquolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 12	A	10YR 3.0 / 1	SILTY CLAY	Common Fine Prominent 10YR 5 / 6	/

Hydric Soils Criteria Met? **Yes**

Remarks:

Hydric Soil Indicators Observed On-Site	F6. Redox Dark Surface _

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** >12 **Depth to Free Water(in):** >12

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
None	None	**Explain:** None

Remarks:

Wetland Hydrology Criterion/Indicators Met? **No**

Is plot a wetland? **No**

Determined by: Jon Schubbe
Mike DeRuyter

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 002 - Wetland **Date:** 5/27/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Wet Drainage Swale- wetland.

Topographic Location: Flat point near stream.

Section: 25
TWN: 111
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? No **Disturbance Comment:**
Soils: No
Vegetation: No
Hydrology: No

Delineation Problem Area? N
Normal Conditions Present On-Site? Y
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Phalaris arundinacea*	85	FACW+	Y
2 *Melilotus officinalis*	20	FACU	Y
3 *Typha angustifolia*	15	OBL	N
4 *Phleum pratense*	10	FACU	N
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 50 % = 2/4

Hydrophytic Vegetation Criteria Met? Yes **NWI Class:** PEMB

Soils

Series Name: MCINTOSH-LAMOURE SILTY CLAY LOAMS, 0 TO 2 P **Drainage Class:** Somewhat poorly drained
Taxomony: Fine-silty, frigid Aeric Calciaquolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 15	A	10YR 2.5 / 1	SILT LOAM	Few Fine Faint 10YR 4.0 / 3	/

Hydric Soils Criteria Met? Yes
Remarks:

Hydric Soil Indicators Observed On-Site	
	F6. Redox Dark Surface Gleyed or Low Chroma Colors

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** 10 **Depth to Free Water(in):** 10

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
Saturated in Upper 12 in	FAC-Neutral Test	**Explain:** None

Remarks:
Wetland Hydrology Criterion/Indicators Met? Yes

Is plot a wetland? Yes **Determined by:** Mike DeRuyter
Joyce Pickle

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 004 - Upland **Date:** 5/27/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Pasture edge in grassy ravine.

Topographic Location: Side slope of ravine.

Section: 24
TWN: 111
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? No
Soils: No
Vegetation: No
Hydrology: No

Disturbance Comment:

Delineation Problem Area? N
Normal Conditions Present On-Site? Y
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Bromus inermis*	65	NI	Y
2 *Solidago canadensis*	20	FACU	Y
3 *Solidago gigantea*	15	FACW	N
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 0 % = 0/2

Hydrophytic Vegetation Criteria Met? **No** **NWI Class:** Upland

Soils

Series Name: BUSE-LANGHEI COMPLEX, 15 TO 40 PERCENT SLOPE **Drainage Class:** Well drained

Taxomony: Fine-loamy, mixed, frigid Udic Calciborolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 12	A	10YR 3.0 / 2	LOAM	/	/

Hydric Soils Criteria Met? **No**

Remarks:

Hydric Soil Indicators Observed On-Site	None

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** >12 **Depth to Free Water(in):** >12

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
None	None	**Explain:** None

Remarks:

Wetland Hydrology Criterion/Indicators Met? **No**

Is plot a wetland? **No**

Determined by: Mike DeRuyter
Joyce Pickle

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 004 - Wetland **Date:** 5/27/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Pasture edge in grassy ravine.

Topographic Location: Low point in grassy ravine.

Section: 24
TWN: 111
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? No **Disturbance Comment:**
Soils: No
Vegetation: No
Hydrology: No

Delineation Problem Area? N
Normal Conditions Present On-Site? Yes
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Carex stricta*	45	OBL	Y
2 *Phalaris arundinacea*	10	FACW+	N
3			
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100 % = 2/2

Hydrophytic Vegetation Criteria Met? **Yes** **NWI Class:** PEMB

Soils

Series Name: BUSE-LANGHEI COMPLEX, 15 TO 40 PERCENT SLOPE **Drainage Class:** Well drained
Taxomony: Fine-loamy, mixed, frigid Udic Calciborolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1				Mottle Characteristics 2
0 - 12	A	10YR 2.0 / 1	SILT LOAM	Cmn.	Fine	Prom.	10YR 4.0 / 6	/

Hydric Soils Criteria Met? **Yes**
Remarks:

Hydric Soil Indicators Observed On-Site	
	F6. Redox Dark Surface Gleyed or Low Chroma Colors

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** 4 **Depth to Free Water(in):** 4

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
Saturated in Upper 12 in	FAC-Neutral Test Local Soil Survey Data	**Explain:** None

Remarks:
Wetland Hydrology Criterion/Indicators Met? **Yes**

Is plot a wetland? **Yes**

Determined by: Mike DeRuyter
Joyce Pickle

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 020 - Upland **Date:** 5/28/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Edge of agricultural field.

Topographic Location: Side slope near drainage swale.

Section: 3
TWN: 111
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? No
Soils: No
Vegetation: Yes
Hydrology: No

Disturbance Comment: Under agricultural production.

Delineation Problem Area? N
Normal Conditions Present On-Site? Y
Explain:

Vegetation

Herb *% total cover: 50*	% Cover	Ind.	Dom
1 *Glycine max*	20	NI	Y
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks: Planted to soybeans

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 0 % = 0/1

Hydrophytic Vegetation Criteria Met? **No** **NWI Class:** Upland

Soils

Series Name: BARNES CLAY LOAM, 2 TO 6 PERCENT SLOPES **Drainage Class:** Well drained

Taxomony: Fine-loamy, mixed, frigid Udic Haploborolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 14	A	10YR 2.0 / 1	SILT LOAM	Few Fine Faint 10YR 3.0 / 2	/

Hydric Soils Criteria Met? **No**

Remarks:

Hydric Soil Indicators Observed On-Site	None

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** >14 **Depth to Free Water(in):** >14

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
None	None	**Explain:** None

Remarks:

Wetland Hydrology Criterion/Indicators Met? **No**

Is plot a wetland? **No**

Determined by: Mike DeRuyter
Joyce Pickle

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 020 - Wetland **Date:** 5/28/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Grassy drainageway.

Topographic Location: Lowpoint in swale.

Section: 3
TWN: 111
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? No **Disturbance Comment:**
Soils: No
Vegetation: No
Hydrology: No

Delineation Problem Area? N
Normal Conditions Present On-Site? Y
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Phalaris arundinacea*	90	FACW+	Y
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100 % = 1/1

Hydrophytic Vegetation Criteria Met? **Yes** **NWI Class:** PEMA

Soils

Series Name: BARNES CLAY LOAM, 2 TO 6 PERCENT SLOPES **Drainage Class:** Well drained
Taxomony: Fine-loamy, mixed, frigid Udic Haploborolls **As Mapped?** **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1				Mottle Characteristics 2
0 - 10	A	10YR 2.0 / 1	SILT LOAM	Few	Fine	Dist.	10YR 3.0 / 2	/
10 - 14	B	10YR 2.0 / 2	SILT LOAM	Many	Med.	Dist.	10YR 4.0 / 2	/

Hydric Soils Criteria Met? **Yes**
Remarks: MAPPED SOIL IS INCORRECT

Hydric Soil Indicators Observed On-Site	
	A11. Depleted Below Dark Gleyed or Low Chroma Colors

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** >14 **Depth to Free Water(in):** >14

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
Drift Lines	Water Stained Leaves FAC-Neutral Test	**Explain:** None

Remarks:
Wetland Hydrology Criterion/Indicators Met? **Yes**

Is plot a wetland? **Yes**

Determined by: Mike DeRuyter
Joyce Pickle

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 027 - Upland **Date:** 5/29/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Pasture

Topographic Location: Side slope just uphill from toe of slope.

Section: 35
TWN: 112
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? No **Disturbance Comment:**
Soils: No
Vegetation: No
Hydrology: No

Delineation Problem Area? N
Normal Conditions Present On-Site? Y
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Bromus inermis*	100	NI	Y
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 0 % = 0/1

Hydrophytic Vegetation Criteria Met? **No** **NWI Class:** Upland

Soils

Series Name: BUSE-LANGHEI COMPLEX, 15 TO 40 PERCENT SLOPE **Drainage Class:** Well drained
Taxomony: Fine-loamy, mixed, frigid Udic Calciborolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 10	A	10YR 2.0 / 1	SILT LOAM	/	/
10 - 14	B	10YR 3.0 / 3	CLAY LOAM	Few Fine Dist. 10YR 4.0 / 2	/

Hydric Soils Criteria Met? **No**
Remarks:

Hydric Soil Indicators Observed On-Site	None

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** >14 **Depth to Free Water(in):** >14

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
None	None	**Explain:** None

Remarks:
Wetland Hydrology Criterion/Indicators Met? **No**

Is plot a wetland? **No**

Determined by: Mike DeRuyter
Joyce Pickle

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 027 - Wetland **Date:** 5/29/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Pasture

Topographic Location: Low point in grassy ravine.

Section: 35
TWN: 112
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? No **Disturbance Comment:**
Soils: No
Vegetation: No
Hydrology: No

Delineation Problem Area? N
Normal Conditions Present On-Site? Y
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Carex stricta*	75	OBL	Y
2 *Phalaris arundinacea*	50	FACW+	Y
3			
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100 % = 2/2

Hydrophytic Vegetation Criteria Met? Yes **NWI Class:** PEM1B

Soils

Series Name: BUSE-LANGHEI COMPLEX, 15 TO 40 PERCENT SLOPE **Drainage Class:** Well drained
Taxomony: Fine-loamy, mixed, frigid Udic Calciborolls **As Mapped?** No **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 12	A	10YR 2.0 / 1	SILT LOAM	Cmn. Fine Dist. 10YR 3.0 / 6	/

Hydric Soils Criteria Met? Yes
Remarks:

Hydric Soil Indicators Observed On-Site	
	F6. Redox Dark Surface Gleyed or Low Chroma Colors

Hydrology

Depth of Surface Water (in): 0 **Depth to Saturation(in):** 5 **Depth to Free Water(in):** 5

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
Saturated in Upper 12 in	FAC-Neutral Test	**Explain:** None

Remarks:
Wetland Hydrology Criterion/Indicators Met? Yes

Is plot a wetland? Yes **Determined by:** Mike DeRuyter
Joyce Pickle

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 032 - Upland **Date:** 5/29/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Grassy slope near field edge.

Topographic Location: Side slope, just uphill from toe.

Section: 36
TWN: 112
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? No **Disturbance Comment:**
Soils: No
Vegetation: No
Hydrology: No

Delineation Problem Area? N
Normal Conditions Present On-Site? Y
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Bromus inermis*	20	NI	Y
2 *Phalaris arundinacea*	100	FACW+	Y
3			
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 50 % = 1/2

Hydrophytic Vegetation Criteria Met? **No** **NWI Class:** Upland

Soils

Series Name: BUSE-LANGHEI COMPLEX, 15 TO 40 PERCENT SLOPE **Drainage Class:** Well drained
Taxomony: Fine-loamy, mixed, frigid Udic Calciborolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 15	A	10YR 3.0 / 1	SILT LOAM	/	/

Hydric Soils Criteria Met? **No**
Remarks:

Hydric Soil Indicators Observed On-Site	None

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** >15 **Depth to Free Water(in):** >15

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
None	None	**Explain:** None

Remarks:
Wetland Hydrology Criterion/Indicators Met? **No**

Is plot a wetland? **No**

Determined by: Mike DeRuyter
Joyce Pickle

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 032 - Wetland **Date:** 5/29/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Grassy swale.

Topographic Location: Lowpoint in grassy ravine

Section: 36
TWN: 112
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? No **Disturbance Comment:**
Soils: No
Vegetation: No
Hydrology: No

Delineation Problem Area? N
Normal Conditions Present On-Site? Y
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Solidago gigantea*	80	FACW	Yes
2 *Phalaris arundinacea*	80	FACW+	Yes
3 *Scirpus atrovirens*	50	OBL	Yes
4 *Poa palustris*	50	FACW+	Yes
5 *Urtica dioica*	20	FAC+	Yes
6 *Juncus dudleyi*	20	FAC	Yes
7 *Carex lacustris*	20	OBL	Yes
8 *Rumex crispus*	15	FAC+	No
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100 % = 7/7

Hydrophytic Vegetation Criteria Met? **Yes** **NWI Class:** PEM1B

Soils

Series Name: BUSE-LANGHEI COMPLEX, 15 TO 40 PERCENT SLOPE **Drainage Class:** Well drained
Taxomony: Fine-loamy, mixed, frigid Udic Calciborolls **As Mapped?** No **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 6	A	10YR 2.0 / 1	SILTY CLAY	/	/
6 - 12	AB	10YR 3.0 / 1	SILTY CLAY	Common Fine Prominent 10YR 4.0 / 6	/
12 - 18	B	10YR 3 / 1	STILY CLAY LOAM	Few Medium Distinct 10YR 4.0 / 6	/

Hydric Soils Criteria Met? **Yes**
Remarks:

Hydric Soil Indicators Observed On-Site	
	F6. Redox Dark Surface Gleyed or Low Chroma Colors

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** 2 **Depth to Free Water(in):** 2

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
Saturated in Upper 12 in	FAC-Neutral Test	**Explain:** None

Remarks:
Wetland Hydrology Criterion/Indicators Met? **Yes**

Is plot a wetland? **Yes**

Determined by: Mike DeRuyter
Joyce Pickle

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 036 - Wetland **Date:** 5/29/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Agricultural field.

Topographic Location: Low point in rolling terrain.

Section: 28
TWN: 112
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? Yes
Soils: No
Vegetation: Yes
Hydrology: No

Disturbance Comment: Under agricultural production.

Delineation Problem Area? N
Normal Conditions Present On-Site? Y
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Rumex crispus*	20	FAC+	Y
2 *Polygonum amphibium*	15	OBL	N
3			
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100 % = 1/1

Hydrophytic Vegetation Criteria Met? **Yes** **NWI Class:** PEM1A

Soils

Series Name: MCINTOSH-BADGER SILTY CLAY LOAMS, 0 TO 2 PER **Drainage Class:** Somewhat poorly drained
Taxomony: Fine-silty, frigid Aeric Calciaquolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 15	A	10YR 2.0 / 1	SILTY CLAY	/	/

Hydric Soils Criteria Met? **Yes**
Remarks:

Hydric Soil Indicators Observed On-Site	– Gleyed or Low Chroma Colors

Hydrology

Depth of Surface Water (in): 1 **Depth to Saturation(in):** 0 **Depth to Free Water(in):** 0

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
Saturated in Upper 12 in	FAC-Neutral Test	**Explain:** None

Remarks:
Wetland Hydrology Criterion/Indicators Met? **Yes**

Is plot a wetland? **Yes**

Determined by: Mike DeRuyter
Joyce Pickle

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 050 - Upland **Date:** 6/3/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Edge of grassy drainageway and agricultural field.

Topographic Location: Side slope, just uphill from grassy drainageway.

Section: 20
TWN: 112
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? Yes
Soils: No
Vegetation: Yes
Hydrology: No

Disturbance Comment: Under agricultural production.

Delineation Problem Area? No
Normal Conditions Present On-Site? Yes
Explain:

Vegetation

Herb *% total cover: 90*	% Cover	Ind.	Dom
1 *Glycine max*	95	NI	Y
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 0 % = 0/1

Hydrophytic Vegetation Criteria Met? **No** **NWI Class:** Upland

Soils

Series Name: KRANZBURG-BROOKINGS SILTY CLAY LOAMS, 1 TO **Drainage Class:** Well drained
Taxomony: Fine-silty, mixed, frigid Udic Haploborolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 12	A	10R 2.0 / 2	SILTY CLAY LOAM	/	/

Hydric Soils Criteria Met? **No**
Remarks:

Hydric Soil Indicators Observed On-Site	None

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** >12 **Depth to Free Water(in):** >12

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
None	None	**Explain:** None

Remarks:
Wetland Hydrology Criterion/Indicators Met? **No**

Is plot a wetland? **No**

Determined by: Jon Schubbe
Mike DeRuyter

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 050 - Wetland **Date:** 6/3/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Grassy drainageway and agricultural field.

Topographic Location: Low point in drainageway.

Section: 20
TWN: 112
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? Yes
Soils: No
Vegetation: Yes
Hydrology: No

Disturbance Comment: Under agricultural production.

Delineation Problem Area? N
Normal Conditions Present On-Site? Y
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Solidago gigantea*	85	FACW	Y
2 *Taraxacum officinale*	25	FACU	Y
3 *Sonchus arvensis*	20	FAC-	Y
4 *Carex lacustris*	20	OBL	Y
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 75 % = 3/4

Hydrophytic Vegetation Criteria Met? **Yes** **NWI Class:** PEM1B

Soils

Series Name: KRANZBURG-BROOKINGS SILTY CLAY LOAMS, 1 TO **Drainage Class:** Well drained
Taxomony: Fine-silty, mixed, frigid Udic Haploborolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1				Mottle Characteristics 2
0 - 6	A	10YR 2.0 / 1	SILTY CLAY LOAM	Few	Med.	Dist.	10YR 4.0 / 3	/
6 - 12	AB	10YR 3.0 / 1	SILTY CLAY LOAM	Cmn.	Med.	Prom.	10YR 4.0 / 4	/

Hydric Soils Criteria Met? **Yes**
Remarks:

Hydric Soil Indicators Observed On-Site	
	F6. Redox Dark Surface Gleyed or Low Chroma Colors

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** >12 **Depth to Free Water(in):** >12

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
Drainage Patterns in Wetl	FAC-Neutral Test Other <Explain in Remarks>	**Explain:** None

Remarks:
Wetland Hydrology Criterion/Indicators Met? **Yes**

Is plot a wetland? **Yes**

Determined by: Jon Schubbe
Mike DeRuyter

Comments: Unharvested soybeans from 2007 season still standing in grassy drainageway. Likely was too wet to harvest. Tractor ruts present in drainageway from 2008 planting.

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 059 - Upland **Date:** 6/3/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Agricultural field.

Topographic Location: Side slope, just uphill from cultivated drainageway.

Section: 18
TWN: 112
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? Yes
Soils: No
Vegetation: Yes
Hydrology: No

Disturbance Comment: Under agricultural production.

Delineation Problem Area? N
Normal Conditions Present On-Site? Y
Explain:

Vegetation

Herb *% total cover: 20*	% Cover	Ind.	Dom
1 *Taraxacum officinale*	20	FACU	Y
2 *Bromus inermis*	20	NI	Y
3 *Phalaris arundinacea*	15	FACW+	N
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 33 % = 1/3

Hydrophytic Vegetation Criteria Met? **No** **NWI Class:** Upland

Soils

Series Name: KRANZBURG-BROOKINGS SILTY CLAY LOAMS, 1 TO **Drainage Class:** Well drained
Taxomony: Fine-silty, mixed, frigid Udic Haploborolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 6	A	10YR 2.0 / 1	SILTY CLAY	/	/
6 - 12	AB	10YR 4.0 / 2	SILTY CLAY	/	/

Hydric Soils Criteria Met? **No**
Remarks:

Hydric Soil Indicators Observed On-Site	– None

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** -- **Depth to Free Water(in):** --

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
None	None	**Explain:** None

Remarks:
Wetland Hydrology Criterion/Indicators Met? **No**

Is plot a wetland? **No**

Determined by: Jon Schubbe
Mike DeRuyter

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 059 - Wetland **Date:** 6/3/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Agricultural field.

Topographic Location: Lowpoint in drainageway of rolling field.

Section: 18
TWN: 112
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? Yes
Soils: No
Vegetation: Yes
Hydrology: No

Disturbance Comment: Under agricultural production.

Delineation Problem Area? N
Normal Conditions Present On-Site? Y
Explain:

Vegetation

Herb *% total cover: 90*	% Cover	Ind.	Dom
1 *Phalaris arundinacea*	90	FACW+	Y
2 *Polygonum punctatum*	20	OBL	Y
3			
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100 % = 2/2

Hydrophytic Vegetation Criteria Met? **Yes** **NWI Class:** PEM1B

Soils

Series Name: KRANZBURG-BROOKINGS SILTY CLAY LOAMS, 1 TO **Drainage Class:** Well drained
Taxomony: Fine-silty, mixed, frigid Udic Haploborolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 3	A	10YR 2.0 / 1	SILTY CLAY LOAM	/	/
3 - 12	AB	10YR 3.0 / 1	SILTY CLAY	Cmn. Fine Dist. 10R 4.0 / 4	/

Hydric Soils Criteria Met? **Yes**
Remarks: Recently tilled

Hydric Soil Indicators Observed On-Site	F6. Redox Dark Surface Gleyed or Low Chroma Colors

Hydrology

Depth of Surface Water (in): 1 **Depth to Saturation(in):** 0 **Depth to Free Water(in):** 0

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
Inundated	FAC-Neutral Test None	**Explain:** None

Remarks:
Wetland Hydrology Criterion/Indicators Met? **Yes**

Is plot a wetland? **Yes**

Determined by: Jon Schubbe
Mike DeRuyter

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 066 - Upland **Date:** 6/3/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** In agricultural field, near grassy drainageway.

Topographic Location: Gentle side slope.

Section: 18
TWN: 112
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? Yes
Soils: No
Vegetation: Yes
Hydrology: No

Disturbance Comment: Under agricultural production.

Delineation Problem Area? N
Normal Conditions Present On-Site? Y
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Glycine max*	50	NI	Y
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 0 % = 0/1

Hydrophytic Vegetation Criteria Met? **No** **NWI Class:** Upland

Soils

Series Name: MCINTOSH-BADGER SILTY CLAY LOAMS, 0 TO 2 PER **Drainage Class:** Somewhat poorly drained

Taxomony: Fine-silty, frigid Aeric Calciaquolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 6	A	10YR 2.0 / 2	SILTY CLAY	Many Fine Prom. 10YR 4.0 / 6	/

Hydric Soils Criteria Met? **Yes**

Remarks:

Hydric Soil Indicators Observed On-Site	F6. Redox Dark Surface Mottled (10")

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** >6 **Depth to Free Water(in):** >6

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
None	None	**Explain:** None.

Remarks:

Wetland Hydrology Criterion/Indicators Met? **No**

Is plot a wetland? **No**

Determined by: Jon Schubbe
Mike DeRuyter

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 066 - Wetland **Date:** 6/3/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** In grassy drainageway.

Topographic Location: swale

Section: 18
TWN: 112
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? No **Disturbance Comment:**
Soils: No
Vegetation: No
Hydrology: No

Delineation Problem Area? N
Normal Conditions Present On-Site? Y
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Phalaris arundinacea*	100	FACW+	Y
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100 % = 1/1

Hydrophytic Vegetation Criteria Met? **Yes** **NWI Class:** PEM1B

Soils

Series Name: MCINTOSH-BADGER SILTY CLAY LOAMS, 0 TO 2 PER **Drainage Class:** Somewhat poorly drained
Taxomony: Fine-silty, frigid Aeric Calciaquolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 18	A	10YR 3.0 / 1	SILTY CLAY	Many Fine Prom. 10YR 4.0 / 6	/

Hydric Soils Criteria Met? **Yes**
Remarks:

Hydric Soil Indicators Observed On-Site	
	F6. Redox Dark Surface Gleyed or Low Chroma Colors

Hydrology

Depth of Surface Water (in): 2 **Depth to Saturation(in):** 0 **Depth to Free Water(in):** 0

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
Inundated	FAC-Neutral Test None	**Explain:** None

Remarks: Standing puddles.
Wetland Hydrology Criterion/Indicators Met? **Yes**

Is plot a wetland? **Yes**

Determined by: Jon Schubbe
Mike DeRuyter

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 078 - Wetland **Date:** 6/4/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Grassy drainageway in fields planted to natives.

Topographic Location: Lowpoint in drainageway.

Section: 19
TWN: 112
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? Yes **Disturbance Comment:**
Soils: Yes
Vegetation: Yes
Hydrology: No

Delineation Problem Area? No
Normal Conditions Present On-Site? Yes
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Phalaris arundinacea*	70	FACW+	Yes
2 *Typha angustifolia*	20	OBL	Yes
3 *Spartina pectinata*	20	FACW+	Yes
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover: 30*	% Cover	Ind.	Dom
1 *Salix spp*	20		Yes
2			
3			
4			
5			

Tree *% total cover: 0*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100 % = 4/4

Hydrophytic Vegetation Criteria Met? **Yes** **NWI Class:** PEMB

Soils

Series Name: BUSE-BARNES LOAMS, 6 TO 9 PERCENT SLOPES **Drainage Class:** Well drained
Taxomony: Fine-loamy, mixed, frigid Udic Calciborolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2

Hydric Soils Criteria Met? **Yes**
Remarks: rocky soil prevented boring- assumed hydric based on plant community, inundation, and landscape position

Hydric Soil Indicators Observed On-Site	-

Hydrology

Depth of Surface Water (in): - **Depth to Saturation(in):** 0 **Depth to Free Water(in):** 0

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
Inundated	FAC-Neutral Test	**Explain:**

Remarks: Water in stream is 12 inches deep- water to surface in sample pit at wetland edge
Wetland Hydrology Criterion/Indicators Met? **Yes**

Is plot a wetland? **Yes** **Determined by:** Mike DeRuyter, Jon Schubbe

Comments: Rocks picked out of adjacent fields have been dumped in wetland at sampling location.

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 098 - Upland **Date:** 6/5/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Pasture

Topographic Location: Side slope.

Section: 3
TWN: 112
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? No **Disturbance Comment:**
Soils: No
Vegetation: No
Hydrology: No

Delineation Problem Area? N
Normal Conditions Present On-Site? Y
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Poa pratensis*	85	FAC-	Y
2 *Elytrigia repens*	40	FACU	Y
3 *Solidago canadensis*	25	FACU	Y
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 0 % = 0/3

Hydrophytic Vegetation Criteria Met? **No** **NWI Class:** Upland

Soils

Series Name: BUSE-BARNES LOAMS, 9 TO 20 PERCENT SLOPES **Drainage Class:** Well drained
Taxomony: Fine-loamy, mixed, frigid Udic Calciborolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 3	A	10YR 2.0 / 2	SANDY LOAM	/	/
3 - 14	AB	10YR 4.0 / 3	SANDY CLAY LOAM	/	/

Hydric Soils Criteria Met? **No**
Remarks:

Hydric Soil Indicators Observed On-Site	None

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** -- **Depth to Free Water(in):** --

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
None	None	**Explain:** None

Remarks:
Wetland Hydrology Criterion/Indicators Met? **No**

Is plot a wetland? **No**

Determined by: Jon Schubbe
Mike DeRuyter

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 098 - Wetland **Date:** 6/5/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Pasture

Topographic Location: Toe of slope near stream.

Section: 3
TWN: 112
RNG: 48
County: Brookings County
State: South Dakota

Significant Disturbance? No
Soils: No
Vegetation: No
Hydrology: No

Disturbance Comment:

Delineation Problem Area? N
Normal Conditions Present On-Site? Y
Explain:

Vegetation

Herb *% total cover: 95*	% Cover	Ind.	Dom
1 *Carex stricta*	95	OBL	Y
2 *Ranunculus pensylvanicus*	20	OBL	Y
3 *Polygonum amphibium*	10	OBL	N
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100 % = 3/3

Hydrophytic Vegetation Criteria Met? Yes **NWI Class:** PEM1B

Soils

Series Name: LAMOURE-RAUVILLE SILTY CLAY LOAMS, CHANNE **Drainage Class:** Poorly drained

Taxomony: Fine-silty, mixed (calcareous), frigid Cumulic Endoaquolls **As Mapped?** Yes **Hydric Soil?** Yes

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 18	A	10YR 3.0 / 1	SILTY CLAY	Cmn. Fine Prom. 10YR 4.0 / 6	/

Hydric Soils Criteria Met? Yes

Remarks:

Hydric Soil Indicators Observed On-Site	F6. Redox Dark Surface Gleyed or Low Chroma Colors

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** 1 **Depth to Free Water(in):** 2

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
Saturated in Upper 12 in	FAC-Neutral Test	**Explain:** None.

Remarks: Riparian PEM1B

Wetland Hydrology Criterion/Indicators Met? Yes

Is plot a wetland? Yes

Determined by: Jon Schubbe
Mike DeRuyter

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 102- Wetland **Date:** 7/28/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Tilled crop field

Topographic Location: Upper drainage catchment along a gently sloping ridge.

Section: 33
TWN: 112
RNG: 48
County: Brookings County
State: SD

Significant Disturbance? Yes
Soils: No
Vegetation: Yes
Hydrology: No

Disturbance Comment: Vegetation removed by cropping.

Delineation Problem Area? No
Normal Conditions Present On-Site? Yes
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Polygonum amphibium*	40	OBL	Yes
2 *Zea mays*	20	NI	Yes
3 *Rumex crispus*	20	FAC+	Yes
4 *Scirpus atrovirens*	20	OBL	Yes
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover: 0*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover: 0*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks: Corn has been stunted, likely as a result of flooding

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 75 % = 3/4

Hydrophytic Vegetation Criteria Met? **Yes** **NWI Class:** PEMA

Soils

Series Name: MCINTOSH-BADGER SILTY CLAY LOAMS, 0 TO 2 PER **Drainage Class:** Somewhat poorly drained

Taxomony: Fine-silty, frigid Aeric Calciaquolls **As Mapped?** No **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 12	A	10YR 2 / 1	Silt Loam	Common Fine Distinct 10YR 4 / 4	/

Hydric Soils Criteria Met? **Yes**

Remarks:

Hydric Soil Indicators Observed On-Site	
	F6. Redox Dark Surface Gleyed or Low Chroma Colors

Hydrology

Depth of Surface Water (in): NA **Depth to Saturation(in):** NA **Depth to Free Water(in):** NA

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
Drainage Patterns in Wetl	FAC-Neutral Test	**Explain:**

Remarks: Downcut erosion taking place along channel serving as the outlet

Wetland Hydrology Criterion/Indicators Met? **Yes**

Is plot a wetland? **Yes**

Determined by: Mike DeRuyter
Jon Schubbe

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 105- Wetland **Date:** 7/28/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Tilled crop field

Topographic Location: Isolated basin along gentle knoll

Section: 25
TWN: 112
RNG: 49
County: Brookings County
State: SD

Significant Disturbance? Yes
Soils: No
Vegetation: Yes
Hydrology: No

Disturbance Comment: Vegetation removed by cropping

Delineation Problem Area? No
Normal Conditions Present On-Site? Yes
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Zea mays*	10	NI	No
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks: Vegetation removed by cropping

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 0 % = 0/0

Hydrophytic Vegetation Criteria Met? **No** **NWI Class:** PEMA

Soils

Series Name: BARNES CLAY LOAM, 2 TO 6 PERCENT SLOPES **Drainage Class:** Well drained

Taxomony: Fine-loamy, mixed, frigid Udic Haploborolls **As Mapped?** No **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 12	A	10YR 2 / 1	Silt Loam	/	/
12 - 18	AB	10YR 4 / 1	Silt Loam	Many Fine Prominent 10YR 4 / 6	/

Hydric Soils Criteria Met? **Yes**

Remarks: Tilled

Hydric Soil Indicators Observed On-Site	A12. Thick Dark Surface

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** >18" **Depth to Free Water(in):** >18"

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
Drift Lines	None	**Explain:**

Remarks:

Wetland Hydrology Criterion/Indicators Met? **Yes**

Is plot a wetland? **Yes**

Determined by: Mike DeRuyter
Jon Schubbe

Comments: Natural vegetation disturbed as a result of trenching and the planted crops have been drowned out

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 107- Wetland **Date:** 7/28/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Tilled crop field

Topographic Location: Isolated basin along gentle knoll

Section: 25
TWN: 112
RNG: 49
County: Brookings County
State: SD

Significant Disturbance? No **Disturbance Comment:**
Soils: No
Vegetation: No
Hydrology: No

Delineation Problem Area? No
Normal Conditions Present On-Site? Yes
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Alopecurus aequalis*	60	OBL	Yes
2 *Carex stricta*	25	OBL	Yes
3			
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100 % = 2/2

Hydrophytic Vegetation Criteria Met? **Yes** **NWI Class:** PEMA

Soils

Series Name: BARNES CLAY LOAM, 2 TO 6 PERCENT SLOPES **Drainage Class:** Well drained
Taxomony: Fine-loamy, mixed, frigid Udic Haploborolls **As Mapped?** No **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 12	A	10YR 2 / 2	Silt Loam	/	/
12 - 18	AB	10YR 4 / 1	Silt Loam	Many Fine Prominent 10YR 4 / 6	/

Hydric Soils Criteria Met? **Yes**
Remarks:

Hydric Soil Indicators Observed On-Site	
	A12. Thick Dark Surface
	Gleyed or Low Chroma Colors

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** >18" **Depth to Free Water(in):** >18"

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
-	FAC-Neutral Test Water-Stained Leaves	**Explain:**

Remarks: Non-cropped area (drowned out crops) in crop field is evidence of hydrology

Wetland Hydrology Criterion/Indicators Met? **Yes**

Is plot a wetland? **Yes** **Determined by:**

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 115- Upland **Date:** 7/28/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Grazed pasture

Topographic Location: Adjacent to toe slope within drainage ravine

Section: 10
TWN: 112
RNG: 48
County: Brookings County
State: SD

Significant Disturbance? No **Disturbance Comment:**
Soils: No
Vegetation: No
Hydrology: No

Delineation Problem Area? No
Normal Conditions Present On-Site? Yes
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Bromus inermis*	65	NI	Yes
2 *Poa pratensis*	35	FAC-	Yes
3			
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 0 % = 0/2

Hydrophytic Vegetation Criteria Met? **No** **NWI Class:** Upland

Soils

Series Name: BUSE-LANGHEI COMPLEX, 15 TO 40 PERCENT SLOPE **Drainage Class:** Well drained
Taxomony: Fine-loamy, mixed, frigid Udic Calciborolls **As Mapped?** Yes **Hydric Soil?** No

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 12	A	10YR 3 / 2	Silt Loam	/	/

Hydric Soils Criteria Met? **No**
Remarks:

Hydric Soil Indicators Observed On-Site	–

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** >12" **Depth to Free Water(in):** >12"

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
None	None	**Explain:**

Remarks:
Wetland Hydrology Criterion/Indicators Met? **No**

Is plot a wetland? **No**

Determined by: Mike DeRuyter
Jon Schubbe

Comments:

Wetland Determination Datasheet

Project Number: 79112 **Site:** Buffalo Ridge II **Plot:** 115- Wetland **Date:** 7/28/2008

Applicant/Owner: Iberdrola Renewables **Plot Location:** Grazed pasture

Topographic Location: Low area in drainage ravine

Section: 10
TWN: 112
RNG: 48
County: Brookings
State: SD

Significant Disturbance? No **Disturbance Comment:**
Soils: No
Vegetation: No
Hydrology: No

Delineation Problem Area? No
Normal Conditions Present On-Site? Yes
Explain:

Vegetation

Herb *% total cover: 100*	% Cover	Ind.	Dom
1 *Carex stricta*	75	OBL	Yes
2 *Scirpus atrovirens*	25	OBL	Yes
3			
4			
5			
6			
7			
8			
9			
10			
11			

Shrub *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Tree *% total cover:*	% Cover	Ind.	Dom
1			
2			
3			
4			
5			

Remarks:
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100 % = 2/2

Hydrophytic Vegetation Criteria Met? **Yes** **NWI Class:** PEMB

Soils

Depth	Horizon	Matrix Color	Matrix Characteristics	Mottle Characteristics 1	Mottle Characteristics 2
0 - 6	A	10YR 3 / 1	Silt Loam	/	/
6 - 14	AB	10YR 3 / 1	Silt Loam	Many Fine Distinct 10YR 4 / 6	/

Hydric Soils Criteria Met? **Yes**
Remarks:

Hydric Soil Indicators Observed On-Site	- Gleyed or Low Chroma Colors

Hydrology

Depth of Surface Water (in): -- **Depth to Saturation(in):** >14" **Depth to Free Water(in):** >14"

Primary Indicators Observed	Secondary Indicators Observed	Recorded Data Available (aerials, gauge)?
Drainage Patterns in Wetl	None	**Explain:**

Remarks:
Wetland Hydrology Criterion/Indicators Met? **Yes**

Is plot a wetland? **Yes**

Determined by: Mike DeRuyter
Jon Schubbe

Comments:

Appendix C
Site Photos

Wetlands 2 & 3 - Facing northeast

Wetland 4 – Facing northeast

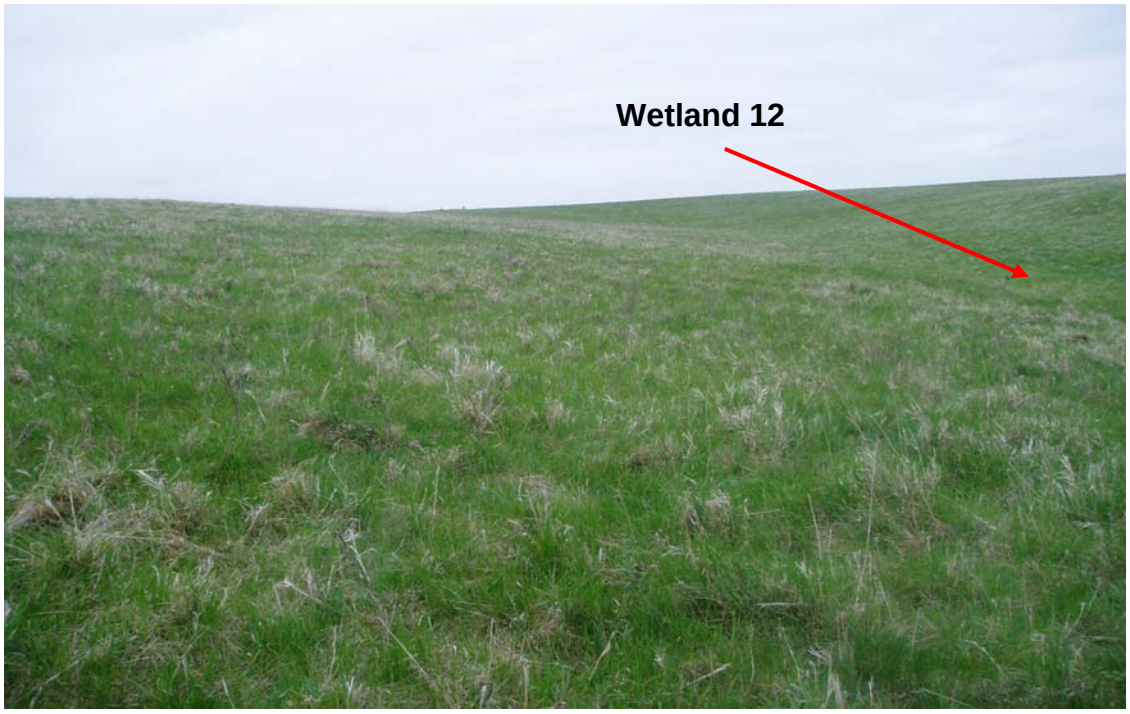
Wetland 5 – Facing northeast

Wetland 6 – Facing north northeast

Appendix C-2
Buffalo Ridge II Wind Project
Brookings County, South Dakota

Wetland 8 – Facing north

Wetland 9 – Facing north



Wetland 12 – Facing west

Wetland 13 – Facing southwest

Wetland 15 – Facing east

Wetland 118 – Facing south

HDR

Appendix C-5

Buffalo Ridge II Wind Project

Brookings County, South Dakota

Wetland 20 – Facing northeast

Wetland 19 – Facing southwest

Wetland 25 – Facing southeast

Wetland 25 – Rock dam at fence line

Wetland 21 – Facing west

Wetland 103 – Facing north

HDR

Appendix C-8
Buffalo Ridge II Wind Project
Brookings County, South Dakota

Wetland 103 – Facing southwest

Wetland 34 – Facing east

HDR

Appendix C-9
Buffalo Ridge II Wind Project
Brookings County, South Dakota

Wetland 35 – Facing east

Wetland 52 – Facing south

Wetland 105 – Drown out – facing west

Wetland 56 — facing northeast

Wetland 53 – Facing northwest

Wetland 106 – Drown out – facing west

Wetland 50 – Facing southwest

Wetland 47 – Facing northeast

HDR

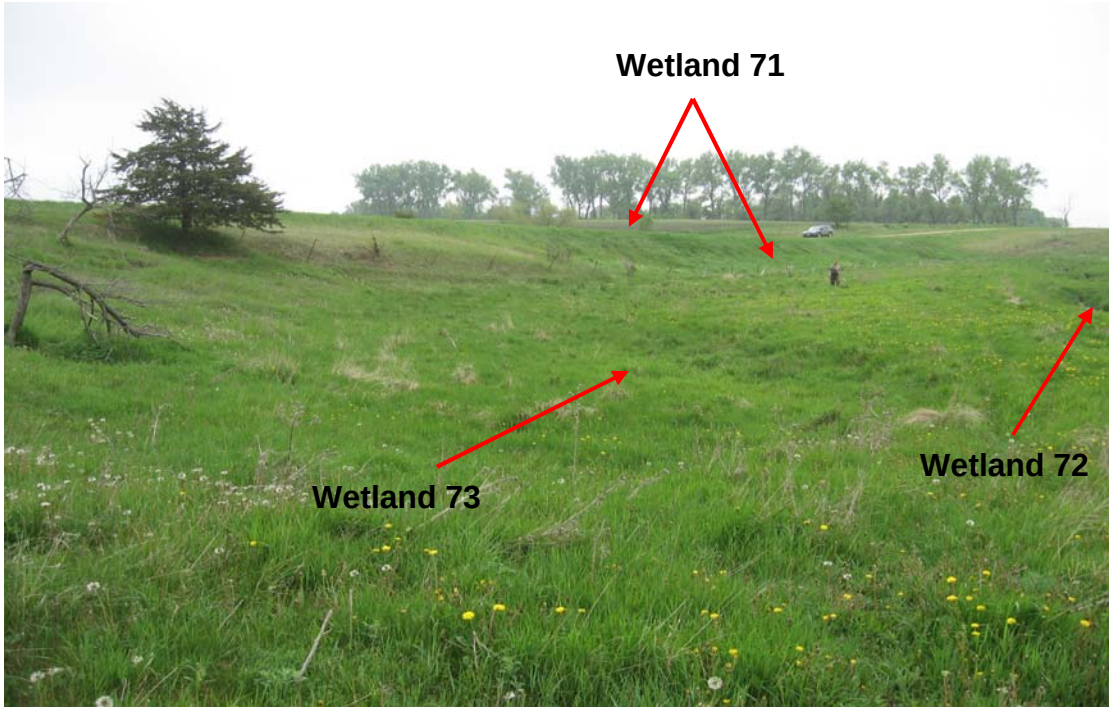
Appendix C-13
Buffalo Ridge II Wind Project
Brookings County, South Dakota

Wetland 78 – Facing south

Wetland 120 - Facing east

HDR

Appendix C-14
Buffalo Ridge II Wind Project
Brookings County, South Dakota



Wetlands 71, 72 & 73 - Facing southeast

Wetland 70 – Facing north

Wetland 80 – Facing south

Wetland 110 – Facing South

HDR

Appendix C-16
Buffalo Ridge II Wind Project
Brookings County, South Dakota

Wetland 66 – Facing southeast

Wetland 62 – Facing northwest

Wetland 60 – Facing northeast

Wetland 65 – Facing east

Wetland 59 – Facing northwest

Wetland 108 – Facing south

Wetland 115 – Facing southwest

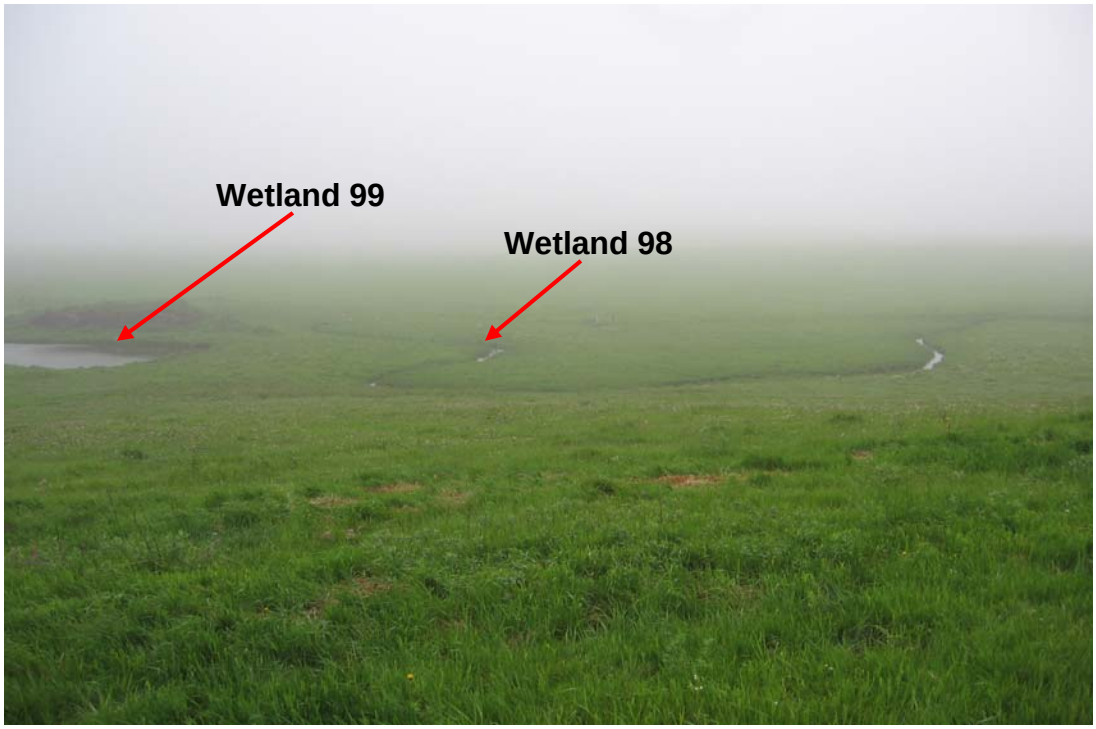
Wetland 88 – Facing southwest

Wetland 87 – Facing northeast

Wetland 86 – Facing northeast

Wetland 117 – Facing west

Wetland 83 – Facing southwest



Wetlands 98 & 99 – Facing northwest

Wetland 97 – Facing southwest

Wetland 95 – Facing southeast

Wetland 91 – Facing northeast

Wetland 112 – Facing west